



ORANGE COUNTY TRANSPORTATION COUNCIL



LONG RANGE TRANSPORTATION PLAN



2015 - 2040



ACKNOWLEDGEMENTS

Orange County Transportation Council

Long Range Transportation Plan 2015 – 2040

Adopted November 17, 2015

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Map and Data Sources

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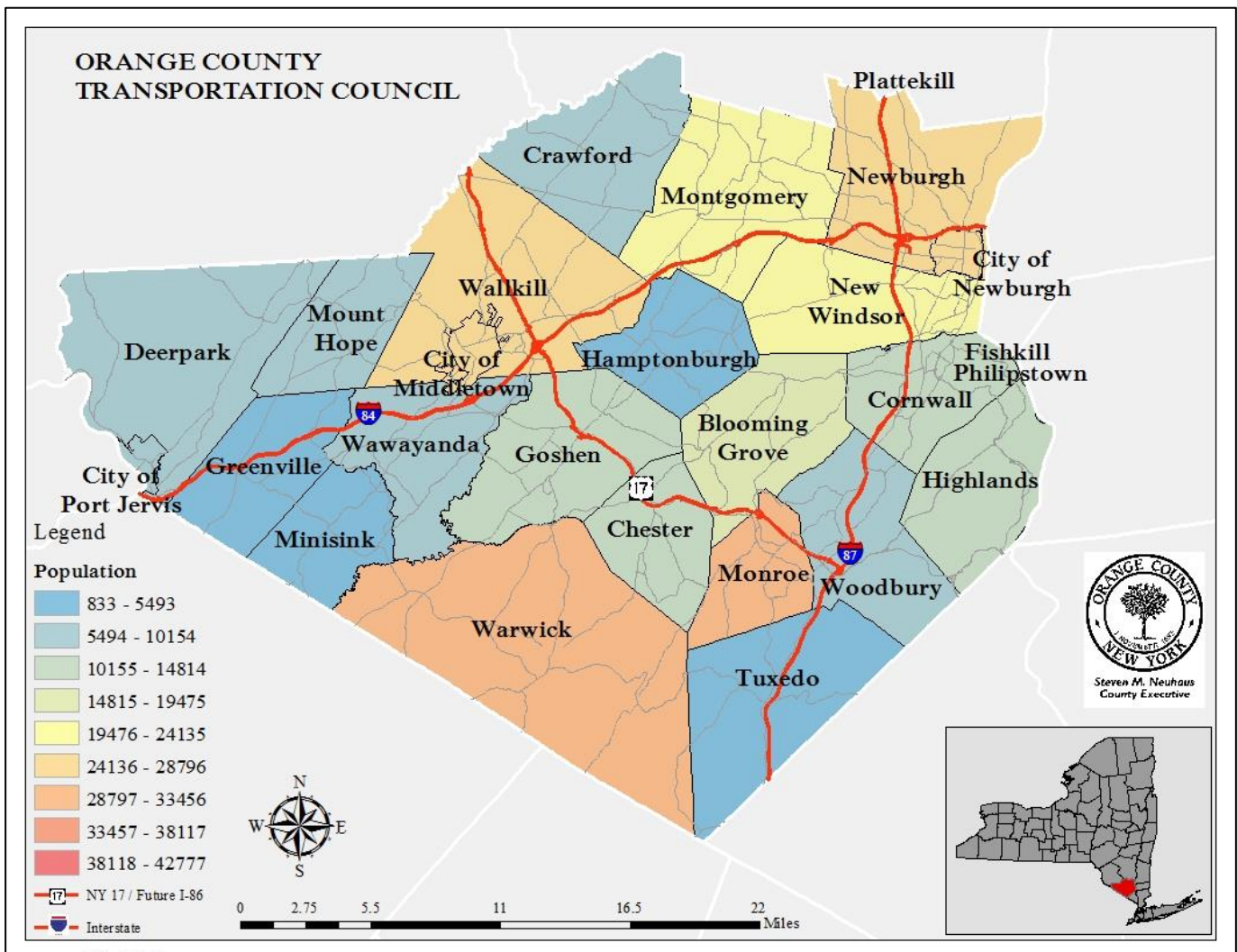
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CHAPTER 1 | INTRODUCTION

Since 1990, Orange County has been the second-fastest-growing county in New York State. Increasing residential development, population growth, commercial development, and all the vehicle traffic that come along with that growth have contributed to making Orange County a visibly different place than it was not very long ago. Until recently, there had been a slowing in the pace of development with the recession and other factors, though this appears to be changing. Orange County is in an important phase of land development and evolution of its regional identity. A combination of features -- notably varied and attractive landscapes; ready accessibility to metropolitan New York and a four State region; and high quality, safe communities -- have made the County a leader in growth and development in recent decades. During the housing boom years of 1998-2006, the pace of new home and retail center construction seemed to have never been quicker. Job growth, retail sales, and real estate values were strong. Several large regional projects -- highway and commuter rail improvements, medical facilities and distribution centers, new housing -- all symbolized opportunity and prosperity.



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Yet growth has real costs. Several of our historic cities and villages still struggle for a role in that prosperity, and six of these historic centers had losses of population in the last decade. Relative affordability stimulated significant in-migration, but diminished housing affordability. Economic realities continue to force more and more farm families to consider the option of selling their farms. A growing number of people complain about traffic congestion, and the rising cost of providing education and other public services.

Orange County received its charter as one of the original counties of New York State in 1687. Today, the County has 20 towns, 19 villages and 3 cities. Transportation is deeply rooted in its history, beginning with Henry Hudson's exploration of the river bearing his name and his anchorage off Cornwall Landing on a September night in 1609. A progression of transportation systems has defined the county's settlement pattern and, from an overall perspective, the framework for its continued evolution. Located at the geographic center of the Boston to Washington corridor of 50 million people and the northern fringe of the 20-million New York - northern New Jersey - Long Island, NY-NJ-CT-PA Consolidated Metropolitan Statistical Area (CMSA), Orange County has both regional and metropolitan transportation connections.

Transportation is defined as the physical movement of people and goods from one place to another. Dispersed origins and destinations for freight and the desire of people to reside away from where they work and trade, has fostered the expanded use of motor vehicles. This evolution in demand has resulted in the continuous call to expand capacity on the highway network. It has both contributed to and has been fostered by dispersed land use patterns in residential and non-residential development, commonly characterized as sprawl. One view is that today's settlement patterns are simply the response to a fundamental human desire for personal space, realized only because freedom of movement is provided by the individual vehicle.

Regardless of the basic causes, the dispersion of activity and development – from central cities to suburbs – has been apparent in Orange County. Population increased from 221,647 in 1970, to 307,647 in 1990, and to 372,813 in 2010.

The nature of activity in the County has also defined the character of its development. It is not simply a "bedroom suburb" of the New York City Metropolitan area; Orange County has had and is growing its own employment base. Residents fill about 65.7 percent of these jobs. Much of the employment, housing and shopping is dispersed, making transit and other modes of travel difficult and therefore reinforcing dependence on personal vehicles for work trips. There is on average one vehicle available for every licensed driver in the county. This is typical of most suburban counties in New York State. For now, the primary exception to reliance on personal vehicles is for commuting trips to New York City, Westchester County and New Jersey. These trips are made on a variety of modes.

New York City is about 50 miles from the Village of Goshen (the County seat and approximate geographic center of the county). Proximity to the largest metropolitan center on the East Coast, as well as higher wage jobs and higher housing prices in areas in the more immediate New York metropolitan area, have fostered growth in Orange County's population.

While Orange County is not just a bedroom suburb, in many ways the county is increasingly being integrated into the larger New York metropolitan region. The continued expansion of regional transportation systems, coupled with the relative affordability of housing (as compared to much of the rest of the metropolitan area) and the attractive, safe living environment, have encouraged the in-migration of a population that often works in Westchester and Rockland Counties, New York City, and northern New Jersey. These same transportation systems, notably three interstate highways, a passenger rail line, and an

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international airport with a potential for growth, have also helped to attract businesses into the county seeking buildable, affordable sites with ready access to the largest market in the United States. Orange County is indeed at a crossroads, figuratively (land use/economy) as well as literally. It has what few counties and regions, and many states, don't have, three intersecting interstate highways: Interstate 84, Interstate 87 (the NYS Thruway) and future Interstate 86 (NYS 17). These highways give Orange County unparalleled highway access to the Northeast, the Midwest and the South. A byproduct of the County's interstate road access is a clustering of big box distribution and retail uses near the interstate highways. This clustering provides important economic benefits as well as challenges regarding truck access and safety, and a reminder of the need to maintain economic diversity. Regional shopping center areas have been built at the strategic locations near the intersections of these interstate arterials. The areas around each of these large commercial developments have seen additional commercial development including smaller shopping centers and "big box" retail stores. Another large regional shopping mall proposed near the intersection of I-87 and I-84 adjacent to the Newburgh Mall received development approval but has yet to begin construction due to the state of the economy. These commercial developments have altered shopping patterns, challenging efforts to reinvigorate the commercial centers of traditional downtowns and weakening older suburban shopping centers.

Many towns have experienced significant residential and commercial development, with development often encroaching on the surrounding country-side. New housing in the county is occupied as quickly as it can be built, though the residential construction and real estate markets have slumped. The pace of redevelopment of older housing has slowed. Redevelopment efforts in the cities and older villages in Orange County are ongoing with notable success in Cornwall, Warwick, Goshen, Montgomery, and Washingtonville among others. The City of Newburgh, which has recently updated its zoning code, has formed a Land Bank dedicated to redevelopment and revitalization in the city's downtown. Fortunately, past development patterns in the county mostly extended historic patterns focusing on areas served by central water and sewer systems. This left significant undeveloped areas, including prime agricultural lands, undisturbed forests and other environmentally sensitive areas along with significant rolling, rural landscapes. This pattern has been formally identified in the Orange County Comprehensive Plan, *Strategies for Quality Communities*, as the Priority Growth Area Concept, and it has the potential to serve the County well in the future.

CHAPTER 2 | OCTC & THE LRTP

Urbanized areas, as defined by the Census Bureau, with a population of over 50,000 are currently required to form or be part of a Metropolitan Planning Organization (MPO). The U.S. Census Bureau defines an Urbanized Area as a central place(s) and adjacent territory with a general population density of at least 1,000 people per square mile of land area that together have a minimum residential population of at least 50,000 people.

The Orange County Transportation Council (OCTC) is the MPO for Orange County, NY. It was formed in July 1982 with the name Newburgh Orange County Transportation Council, but was shortened to the Orange County Transportation Council when the 2000 Census determined that the Middletown small urban area exceeded a population of 50,000 when, instead of adding a city name to the MPO, the existing city in the MPO name was dropped.

Like all other MPOs in the country, OCTC is a multi-agency consortium. Given that the consortium is not an entity which can enter into agreements, each MPO has a host agency; here it is Orange County. MPOs are tasked with certain responsibilities in accordance with Federal transportation legislation. The most recent legislation is the Moving Ahead for Progress Act of the 21st Century or MAP-21, which became effective in July 2012. The policy provisions of this legislation are still in the process of being effectuated by the US Department of Transportation through Federal regulations. Development of a new five year extension is overdue.

Like previous Federal transportation legislation, MAP-21 requires that MPOs produce three major products: a Long Range Transportation Plan; a Transportation Improvement Program (TIP) that sets out a schedule of capital projects to be funded and built/undertaken; and a Unified Planning Work Program (UPWP).

While there are numerous urbanized locations in Orange County, the transportation council together with the State and Federal governments develop a generalized urbanized area boundary which includes all the urban areas as of the most recent Census plus those areas which can be reasonably expected to become urbanized over the subsequent twenty year period. Nevertheless, the OCTC planning area comprises all of Orange County. The updated urbanized area boundary map completed in 2013 can be seen on page 8.

The most important policy change being brought about by MAP-21 is a focus on performance-based planning and programming. States, MPOs and operating agencies are being asked, and will be required through federal regulations still in development, to define performance measures which can be tracked, analyzed and used to guide planning and funding programming decisions. The following national goals are stated in MAP-21 regarding areas of performance management:

- Safety —To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- Infrastructure condition —To maintain the highway infrastructure asset system in a state of good repair.
- Congestion reduction —To achieve a significant reduction in congestion on the National Highway System.
- System reliability —To improve the efficiency of the surface transportation system.
- Freight movement and economic vitality —To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development

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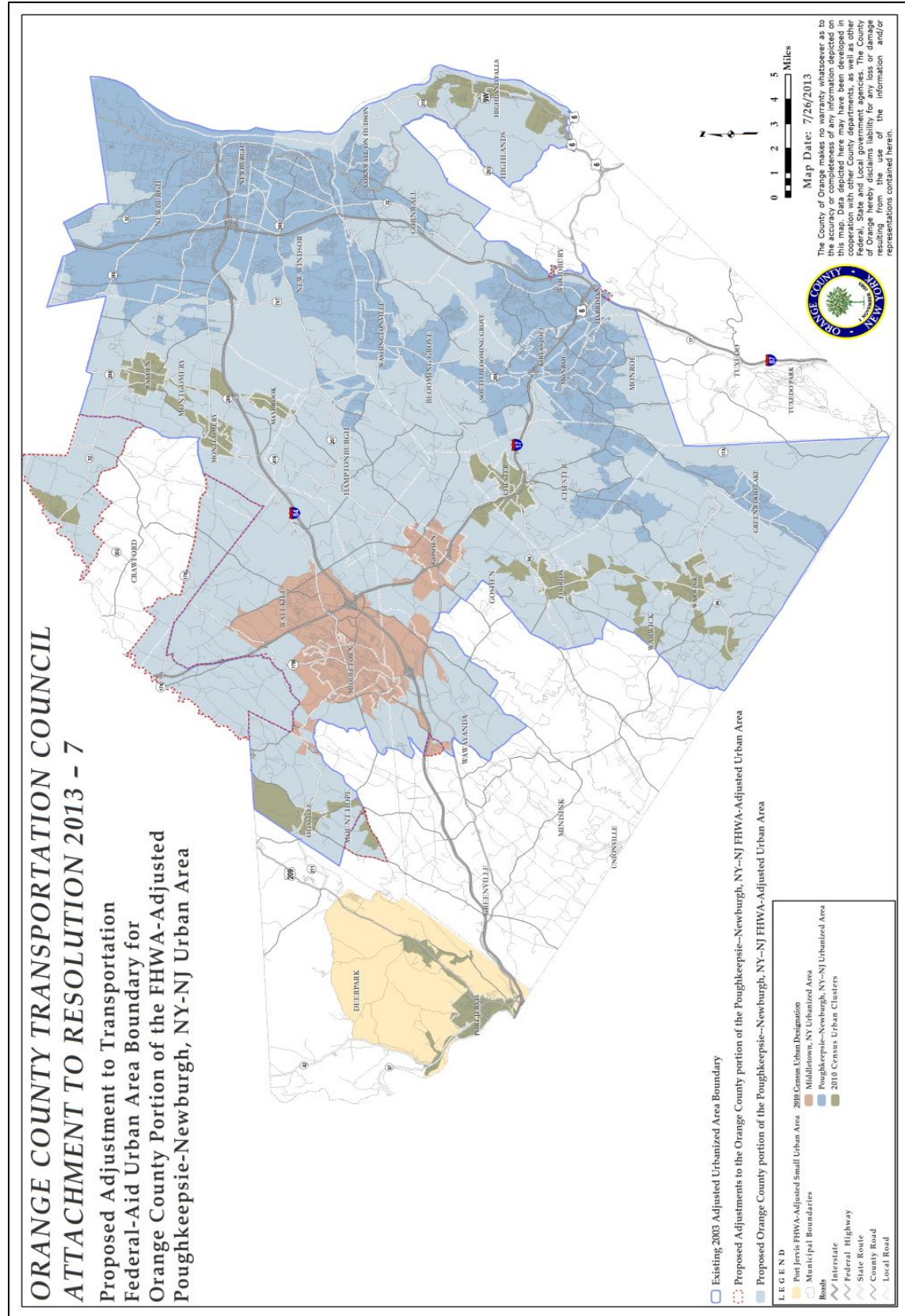
- Environmental sustainability —To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- Reduced project delivery delays —To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

In addition, US Secretary of Transportation must develop performance measures for transit state of good repair and transit safety.

The US Department of Transportation is in the midst of the federal rule-making process regarding the institution of the performance measurement regime, in addition to the other rule-makings which have not yet been completed to make MAP-21 fully effective. The status of the rule-making process as of September 2015 is:

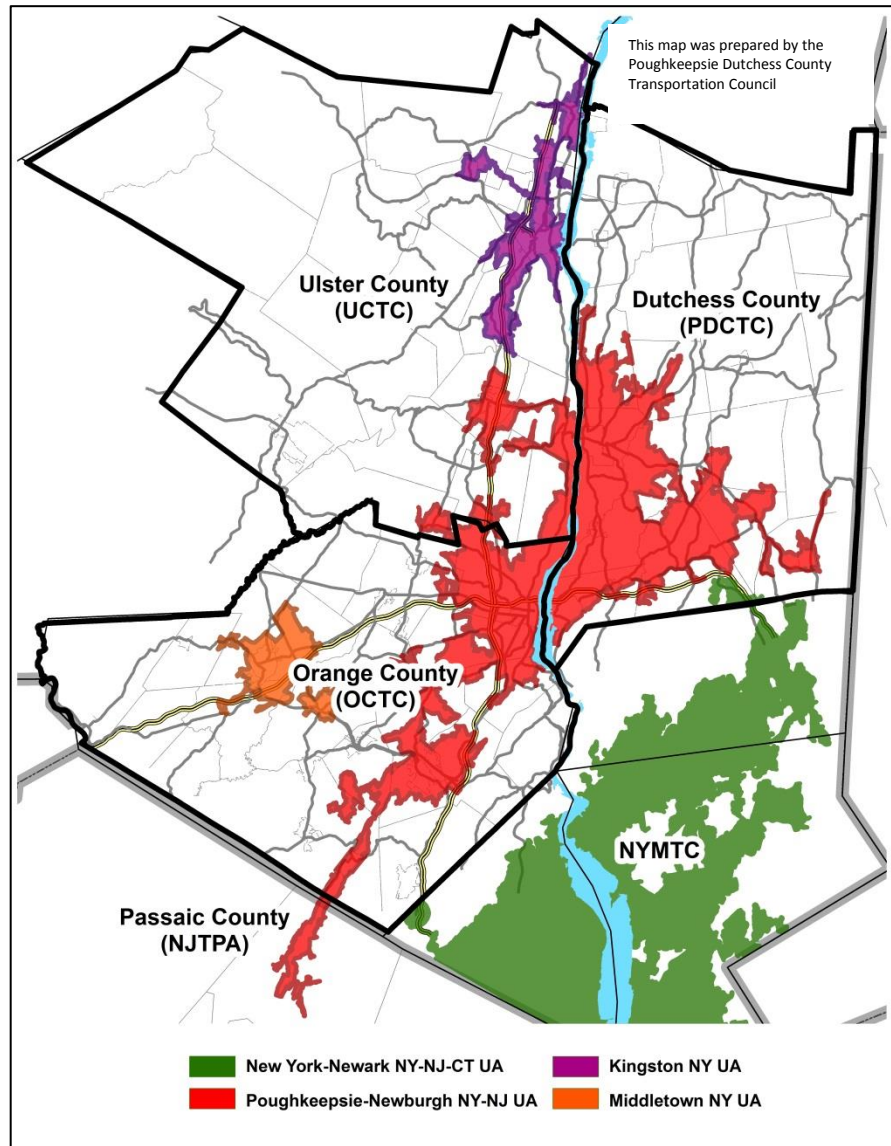
- Highway Safety Improvement Program: final rule may be published by 12/2015
- Safety Performance Management: final rule may be published by 1/2016
- Congestion Mitigation Air Quality: notice of proposed rulemaking may be published by 12/2015
- System Performance: notice of proposed rulemaking may be published by 12/2015
- Statewide and Metropolitan Planning: final rule may be published by 3/2016
- Pavement & Bridge Performance Management: final rule may be published by 4/2016
- Highway Asset Management Plan: final rule may be published by 4/2016
- Public Transportation Safety Program: notice of proposed rulemaking was published 8/2015
- Transit Asset Management: notice of proposed rulemaking was published 9/2015

The institution of the coordinated Federal/State/MPO/Operating Agency performance management regime is a complicated, complex and time-consuming process. In general, the Federal government through USDOT has initiated and at some point in time will complete its rule-making processes. States will then have one year to develop state level performance measurement systems based on the federal rules. Following State action, MPOs will then have six months in which to institute MPO-level performance measurement systems based on what both the federal government and states create. Given the level of ongoing discussion and coordination related to these processes, and the time frames involved (which so far have been continually extended), it is unclear when the federal rule-makings will be completed, when the state performance measurement development clock will start, whether that process will be completed in the time allotted and, finally, when OCTC will be required to actually state how it will address the federal and state performance measurement requirements and whether it will seek to institute any local performance metrics. It is also unclear whether the Statewide and Metropolitan Planning rule and the various performance measurement rules will require that OCTC update its long range plan within some specified time period after the state acts or whether OCTC could institute its performance measurement system in four years with the next plan update. Given the uncertainty, OCTC will monitor the progress and will continue using the various performance metrics which are already of utility.



MID-HUDSON VALLEY TRANSPORTATION MANAGEMENT AREA

Due to the nature of US Census Bureau urban area designations, the urbanized areas on either side of the Hudson River in Orange and Dutchess Counties are connected. This urbanized area is collectively known as the Poughkeepsie-Newburgh Large Urbanized Area. With the 2000 Census, this multi-county urbanized area was found to have grown to encompass parts of Ulster County, across the Hudson from the City of Poughkeepsie in Dutchess County. The population of the Poughkeepsie-Newburgh urbanized area was 351,000 in 2000 according to the Census Bureau. A population of 200,000 is the threshold the Federal government has set for establishing a Transportation Management Area (TMA). The Mid-Hudson TMA is a joint activity of the Orange, Dutchess, and Ulster County Transportation Councils. There is no separate governing entity for the TMA; the three MPOs coordinate certain actions, primarily through their staff.



Above shows the Census Bureau designated lines for large and small urban, but doesn't include small urban clusters (see Urban Area Boundary Map, pg 9). For TMA planning purposes, all three counties are included in their entirety.

TMA activities include the sub-allocation of certain Federal transit funds, improved coordination of inter-county transit operations, and undertaking a Congestion Management Process which was initiated in 2005. The FHWA and FTA completed the first TMA certification review in 2005 and subsequent reviews for 2009 (completed 2010) and 2013 (completed 2014). The findings of the certification reviews can be fairly summarized as being generally positive with some recommendations for improvement. These certification reports are posted on the OCTC website (www.orangecountygov.com/planning/octc).

CHAPTER 2 | OCTC & THE LRTP

OCTC STRUCTURE

Two documents set forth the makeup of OCTC and how it operates: (1) An agreement between New York State and host agency Orange County and (2) the OCTC Operating Procedures which were last revised in June 2012 (*with another update pending for consideration coincident with consideration of this plan update in November 2015*). The Council meets as necessary during the year. A Planning Committee (formerly Technical Committee) comprised of staff from the various OCTC members meets monthly. The Policy Board (formerly Executive Committee) of the Council is comprised of the following members and voting representatives:

Permanent Voting Members

- Orange County Executive, Permanent Chairperson
- NYSDOT Region 8 Director, Permanent Secretary
- Metropolitan Transportation Authority, Chairman / Chief Executive Officer
- NYS Thruway Authority Executive Director
- City of Middletown Mayor
- City of Newburgh City Manager
- City of Port Jervis Mayor

Two Town Supervisors from the following areas on a 2-year rotating basis

- Newburgh Urbanized Area (Cornwall, Montgomery, New Windsor, Newburgh)
- Southern Area (Blooming Grove, Chester, Highlands, Monroe, Tuxedo, Warwick, Woodbury)
- Western Gateway Area (Crawford, Deerpark, Goshen, Greenville, Hamptonburgh, Minisink, Mt. Hope, Wallkill, Wawayanda)

Two Mayors from any two of Orange County's Villages for a 2-year rotating term. Non-Voting Members of the Council are:

- All other Towns and Villages
- NYS Bridge Authority Director
- Federal Transit Administration Regional Administrator
- Federal Highway Administration Division Administrator
- Port Authority of New York and New Jersey

The Planning Committee is responsible for assisting the Council and staff regarding proposed programs and projects to be addressed in the Long-range Transportation Plan, the UPWP and the TIP, and for making recommendations to the Council regarding policy issues. The Committee is made up of technical staff from each of OCTC's members.



Orange County Executive Committee

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The OCTC Staff functions are performed by the Orange County Planning Department and the NYSDOT Regional Office in Poughkeepsie. The OCTC County Planning Staff assumes primary responsibility for the development and administration of the UPWP and the coordination of data collection activities. While all members participate in TIP development, NYSDOT Regional Office staff play a key role in development, and are responsible for TIP maintenance. Long-range transportation planning, including the maintenance/update of the Long Range Transportation Plan, is the joint responsibility of both agencies in coordination with the Transportation Council.

OCTC has a public participation plan which is part of the OCTC Operating Procedures. This plan is integrated with the voting representation structure for the Council. In addition to general county level participation opportunities (i.e. single events or meetings for the entire planning area), the participation plan outlines three geographic sub-regions for outreach. The towns in the county are represented on the MPO for voting purposes based on these same sub-regions (two town votes per sub-region). In completing this plan update, OCTC conducted sub-regional public meetings in these areas, in addition to meetings of the Planning Committee and Policy Board. Materials are also posted at the OCTC website.

OCTC staff and member agencies routinely use visualization techniques in their planning efforts and public participation activities. These include standard techniques such as graphs, charts, photographs and maps. Newer techniques include software presentation tools, videos, and static photo simulations. Software travel simulations are valuable for enabling the display of visual, animated simulations of current and alternative, potential future traffic and roadway configuration scenarios.

OCTC is a member of the New York State Association of MPOs (NYSAMPO). Through collaboration and joint work activities, all MPOs in New York are able to enhance their transportation planning efforts. NYSAMPO activities are supported directly with FHWA and FTA planning funding which is matched by New York State. In addition to monthly staff director meetings, NYSAMPO has formed staff working groups to address common issues and annually undertakes shared cost initiatives (SCI's) to examine specific topics from which all MPOs in New York will benefit. The New York State Department of Transportation participates in the selection of SCI projects and customarily provides half of the funding for such initiatives. The UPWP provides for the participation of OCTC members and staff in NYSAMPO activities which further its overall transportation planning efforts and capacity. Staff participate in monthly MPO Director's meetings, participate in the various staff level working groups as able, assist and participate with the conduct of SCI's as necessary and able, and otherwise collaborate with other NY MPOs and NYSDOT through this avenue. More information is available at the NYSAMPO website (www.nysmpos.org).

LONG RANGE TRANSPORTATION PLANNING PROCESS

Transportation provides the linkages among the places in which we live, work and play. The Orange County Transportation Council provides a forum for addressing the transportation needs of the County's residents and visitors through planning and programming decisions. The overall goal of the planning process is to provide safe, balanced and efficient transportation in Orange County as well as complementary transportation connections to the rest of the world. Guidance for how the transportation planning process is to be carried out and what, at a minimum, is to be examined is provided in Federal legislation. This legislation includes eight planning factors which are to be considered in State and Metropolitan transportation planning programs and projects. The OCTC Long Range Transportation Plan was last updated in 2011, with a minor revision in 2014; it must be updated every four years.

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The 1995 Long Range Transportation Plan (“2020 Vision Plan”) considered a number of questions related to transportation and patterns of development in Orange County. That plan was updated in 1998 to provide new information where it was available and to continue to address those questions related to the interaction between transportation and land development patterns in the County. The 1998 update formed a framework for identifying studies and projects to be undertaken. The 2003 plan update reaffirmed the previous plans and was entitled “Vision 2025”. The 2007 update of the OCTC Long Range Transportation Plan built on the foundation of earlier transportation plans and generally reaffirmed the previous plan policies and recommendations. It updated information and fiscal outlooks based on budget assumptions at the time. In addition to revised organization, the 2007 plan update also differed in the following ways:

- Presented a single future development (not three) based on the County Comprehensive Plan
- Updated to reflect then new Federal surface transportation legislation (SAFETEA)
- Plan horizon year pushed from 2025 to 2035
- Recognition of partnership with Dutchess and Ulster Counties through the TMA including the implementation of a Congestion Management Process
- Goals and objectives – a distinct chapter with recommendations added by topic
- Eight planning factors instead of seven (security emphasized by being made its own factor; separated from safety)

As with the previous plans, the 2007 plan update acknowledged the significant and substantial interrelationship between transportation systems and the land uses and activities which they connect. It also acknowledged the planning of the multiple entities and agencies in and serving Orange County. These include the agency plans and funding outlooks of the major transportation agencies which utilize Federal funding as well as the planning which is supported by Federal funding (through the Unified Planning Work Program or UPWP). The UPWP efforts are coordinated by the OCTC host agency staff at the Orange County Planning Department. The foundation for that planning is Orange County’s Comprehensive Planning program and its priority growth area strategies. Major transportation agency planning is discussed in part within the chapters describing the various components of the transportation system.

The 2011 update of the OCTC Long Range Transportation Plan relied on the document structure created in 2007. In most respects it was essentially a minor update, with the planning effort working primarily to update the information in the document, while extending the planning horizon to 2040 and developing a new air quality conformity analysis. Due to the fiscal and economic problems in the state and nation, the program planning of its member agencies and related factors, the 2011 plan also acknowledged the increased fiscal constraints on transportation funding.

This 2015 plan update is also essentially a minor update of the previous 2011 plan. The planning efforts were directed primarily to updating the information in the document, providing current overviews of agency planning, and incorporating MAP-21. The fiscal situation remains simultaneously bleak and unclear. The planning horizon continues to be 2040, which is within the required twenty year time horizon required for MPO plans, in order to be consistent for air quality conformity purposes with the plan horizon year of the New York Metropolitan Transportation Council. While an updated air quality conformity document has been prepared, a new air quality conformity analysis has not been undertaken for this plan update since the listing of non-exempt projects in the plan has not changed.

CHAPTER 3 | POPULATION, HOUSING, & TRAVEL

A note about the data: In 2000 and prior Census years, the Census Bureau collected information regarding commuting, housing conditions, vehicles, income, and other matters through the use of the “long form,” which went to approximately 1 in 6 households and included a wide range of questions. With the implementation of the American Community Survey, the “long form” was abolished beginning with the 2010 Census. The most recent data available for the County and its municipalities are the 2009-2013 American Community Survey 5-Year Estimates; population data are taken from the 2010 Decennial Census (and previous Decennial Census products, in comparisons). Commuting data (journey-to-work) has been compiled by the American Association of State Highway and Transportation Officials using the 2006-2008 American Community Survey 3-Year Estimates.

POPULATION

As of July 1, 2014, Orange County’s estimated population of 376,099 ranked it as the 12th most populous county of the 62 counties in New York. The estimated growth rate of 0.88% since the 2010 Census continues to place Orange County in the forefront of growth in New York State. Although rates of population growth may fluctuate and Orange County’s growth has slowed in recent years, the County is one of the few in the region and statewide to show positive growth following the Great Recession.

Historic census data reveals Orange County experienced the largest rates of growth from 1950-1970, when the average annual increase was 2.1%. From 1960-2010, Orange County’s average annual population increase was 2.06%, far exceeding both the State (0.31%) and Nation (1.44%).

Regional Population Growth, 2000-2010			
County	Census 2000	Census 2010	% Change
Orange	341,367	372,813	9.21%
Dutchess	280,150	297,488	6.18%
Rockland	286,753	311,687	8.69%
Ulster	177,749	182,493	2.67%
Putnam	95,745	99,710	4.14%
Sullivan	73,966	77,547	4.84%

In 1940, 45% of the County’s residents were located in its cities, and only about 38% of the resident population located in the towns outside the villages. From 1940 to 1950 population shifted away from the cities and by 1970 56% of the County’s population resided in its towns. During this time, the village share of the population remained fairly stable at 18%. In 2006, two new villages were created in the County, the Villages of South Blooming Grove and Woodbury. Due in part to the new villages, the 2010 Decennial Census shows that while the majority of the County’s population, 56%, resides in the towns outside the villages, and the city population has remained steady at about 18%, the villages’ share of the population has increased to approximately 26%.

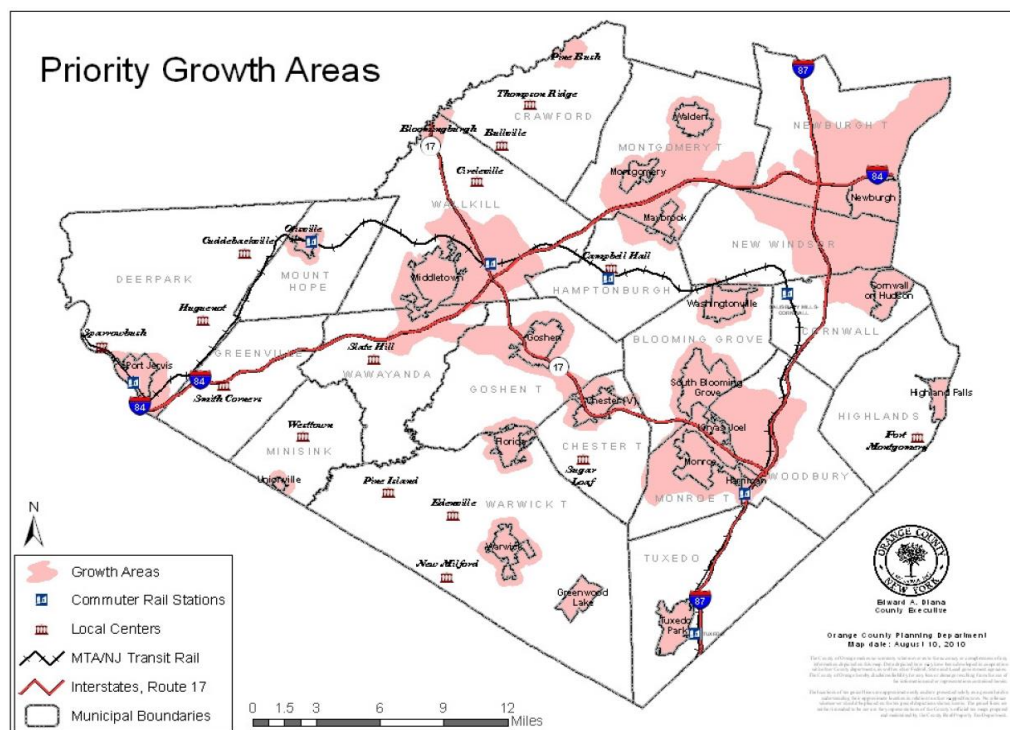
From 2000 to 2010, the Village of Kiryas Joel, which was established in 1977, grew 53.56%, leading the County in growth. Although the County saw a population increase of 9.2% during this time period, one city, nine towns and six villages exceeded this growth rate. From 2000 to 2010, the average growth rate of the

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cities was 4.14%, with the city of Newburgh being the most populous in 2010, with 28,866 residents and the city of Middletown having the highest growth rate, at 10.63%. Based upon Census 2010 data, Orange County, comprised of 811.7 square miles of land area, had an average population density of about 460 persons per square mile. The cities of Newburgh and Middletown and the Village of Kiryas Joel have the highest population densities.

When incorporated places in New York are ranked according to their 2010 population, six communities in Orange County placed among the top 100 in New York State. The Town of Monroe ranked highest at 48 with a population of 39,912, while the Town of New Windsor, with a population of 25,244, placed 97th.

In 2013, the Census Bureau estimated the median age of Orange County to be 36.7, among the youngest counties in the region. It is slightly younger than both the national median age of 37.3, and the State's median age of 38.1. The County has 'aged' 6 years since 1980, when the median age was 30.2. Like the nation, it is expected to continue to slowly age for some time. Census data and proprietary data sources indicate the trend in age distribution for approximately the next twenty-five years to be a slow gradual decline in those aged 45-54, with an increase in those aged 65 and over. The County's estimated population in 2013 aged 65 and over was 11.4%; by 2020, this number is expected to grow to 13.8% of the County population.



RACE AND ETHNICITY

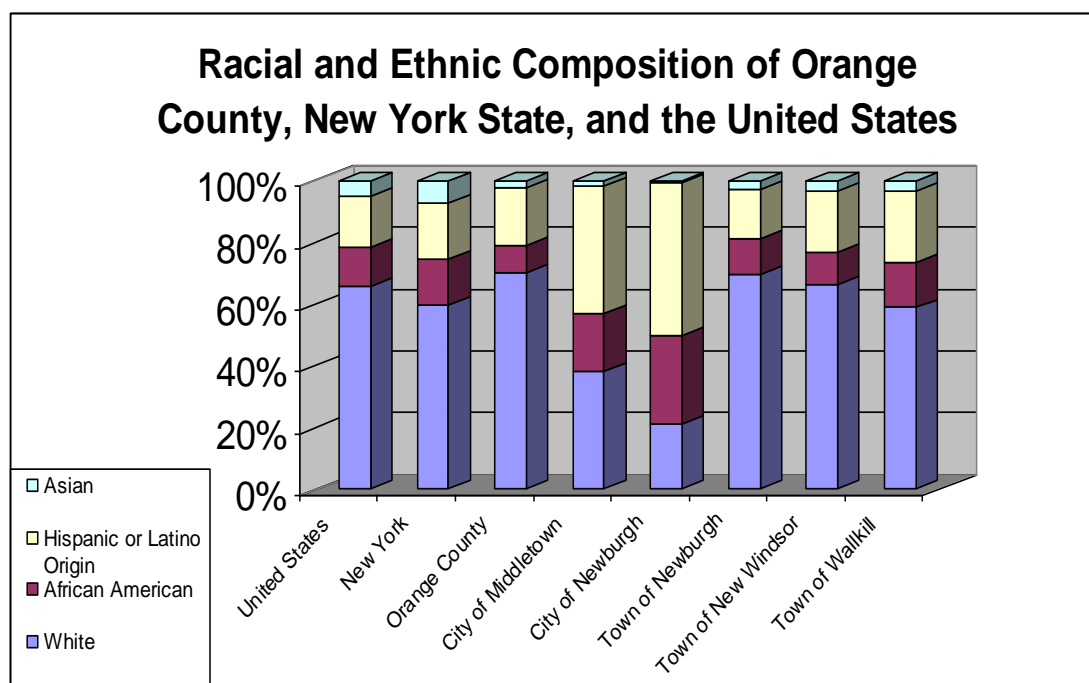
In the New York metropolitan region, ethnic diversity varies inversely with proximity to New York City. Orange is less diverse than its southern neighbors, but more diverse than its neighbors to the north. This inverse correlation is also evident in regard to immigration; approximately 11% of Orange County residents are foreign-born, compared to over 20% of residents of Rockland County to the south, and 7% of residents of Ulster County to the north.

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Census figures show Orange is racially and ethnically diverse. Although changes in methodologies have affected racial comparisons, the trends occurring within the County regarding racial composition mirrors those changes which are occurring on both the National and State levels. Orange County residents choosing to report a single race in the 2010 Census show the County's population as 77% white, 10% African-American, 2.4% Asian, 0.46% Native American and Alaska Native, 0.03% Native Hawaiian and Pacific Islander, and 6.6% "other", with 3.1% of residents reporting two or more races. Hispanic or Latino, an ethnic category that may include all categories of race, was estimated to be 18%.

The increase in the Hispanic/Latino population is consistent with the growth of this segment in neighboring counties such as Westchester and Rockland, and follows the national trend. The Hispanic or Latino population of Orange County has increased 69.1% since the 2000 Census, followed by a 68.4% increase in Asian residents and a 22.8% increase in African American residents. The white non-Hispanic or Latino population saw a decline of 4.1%.

According to the 2010 Census redistricting data, approximately 40% of both the African-American population and the Latino population in the County reside in the County's three cities. Census 2010 data indicated that 67% of the County's African American population and 61% of its Hispanic/Latino population resided in the cities of Newburgh and Middletown and the Towns of Newburgh, New Windsor and Wallkill. The Towns of Newburgh, New Windsor, and Wallkill also contain approximately 30% of the Asian population.



HOUSING

There were approximately 137,000 housing units in Orange County according to the 2010 Census, of which 8.1% were vacant. The ratio of owner-occupied to renter-occupied units has risen over the last ten years from about 2 to 1 to about 2.5 to 1. Of the owner-occupied units, 44.6% had two vehicles and 27.8% had three vehicles or more, according to the 2009-2013 American Community Survey 5-year data. In 1980, 42% of Orange County's 93,274 units of housing were designated as 'rural', that is, they were located outside the

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census designated urbanized areas. By 2010, only 22.5% of the County's housing units were classified as being in rural areas. Regionally, in 2010, both Sullivan and Ulster Counties continued to have more than 50% of their housing stock in the rural designation, while Rockland County is the most urban (with just 0.7% of its housing in rural classified areas).

INCOME

According to the 2009-2013 American Community Survey 5-year estimate, the median income of households in Orange County was approximately \$70,458. The median household income for New York State in the same timeframe was about \$58,003. Nationally, the median household income was approximately \$53,046. Among the Hudson Valley counties, Orange County's median household income ranked fifth, below Putnam, Rockland, Westchester and Dutchess Counties and above Ulster and Sullivan Counties. The Town of Hamptonburgh, the Town and Village of Woodbury, the Village of Monroe and the Village of Tuxedo Park were the only communities in Orange County where the median household income exceeded \$100,000. Although the median income in the majority of municipalities exceeded the County's median household income, there were a number in which this was not the case. Among these were the County's three cities. For many in the County, including current residents, senior citizens, younger adults and families, and people with more modest incomes, housing in the County is increasingly unaffordable.

Newburgh and Middletown have very high rates of individuals who live below the poverty level. There were 3,062 households in Orange County that received cash public assistance in 2013. In the City of Newburgh, 49.9% of families earned less than \$42,550 a year, roughly the local poverty line for a family of four in 2013, as estimated by Regional Economic and Community Action Partnership in Middletown. 26.3% of families earn below the Federal poverty line (\$23,550 for a family of four in 2013). 37.0% of people in the City of Newburgh aged 16 and over are not in the workforce; 6.3% of those in the workforce are looking for work but cannot find it. 30.5% of adults over age 25 have no high school diploma. 55.1% of households in Newburgh pay at least 35% of their income in rent.

Orange County has a higher share of blue-collar workers (20.7%) than the State as a whole (17.9%), and a higher concentration of jobs in wholesale-retail trade (16.8% compared to the State's 13.3%), reflecting the County's status as a retail hub. The County has a higher percentage (6.3%) than the State (5.1%) of the population employed in transportation-warehousing-public utilities, reflecting some measure of success in attracting trucking and warehouse operations.

Income and Poverty, American Community Survey

2009-2013 5-Year Estimates

	Median Household Income	% of Population below federal poverty level
New York State	\$58,003	15.3%
Orange County	\$70,458	12.4%
City of Middletown	\$53,446	18.2%
City of Newburgh	\$35,731	30.3%
City of Port Jervis	\$36,250	17.7%

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PLACE OF WORK AND COMMUTING PATTERNS

As Orange County's population has increased, so too has the number of total workers. According to the 2009-2013 American Community Survey 5-year estimate, approximately 170,241 workers reside in the County. In that same timeframe, workers age 16 and over who did not work at home reported an average travel time to work of 33.3 minutes, an increase of about 6 minutes from 1990. In 1980, the average journey to work was a little more than 24 minutes. Although many Orange County commuters work within the County or outside the County with a shorter commute, Orange County routinely features in discussions of "mega-commutes," defined as commuters that travel 90 minutes or more and 50 miles or more. In 2013, using data from the 2006-2010 American Community Survey 5-Year Estimates, researchers determined that Orange County residents commuting to Manhattan had the fifth-longest average commute in the nation. Commuting for Orange County residents is facilitated by the County's proximity to New York City and parts of New Jersey, all within 60 miles, which serve as employment destinations for its residents. About 10.3% of county residents commuted to Manhattan in 2013, according to the Census Bureau's Local Employer-Household Dynamics Origin-Destination Employment Statistics data.

Commuting Patterns Into and Out of Orange County All Workers Age 16 & Over					
Residence County	Commuting In Into OC	% of Total	Workplace County	Commuting Out	% of Total
Ulster	9,670	31%	Manhattan	11,590	19%
Sullivan	5,345	17%	Rockland	10,235	17%
Dutchess	4,365	14%	Bergen	8,360	14%
Pike (PA)	2,585	8%	Westchester	6,715	11%
Rockland	1,945	6%	Dutchess	6,515	11%
Westchester	1,090	4%	Bronx	3,370	5%
Sussex (NJ)	885	3%	Ulster	2,790	5%
Passaic (NJ)	550	2%	Sullivan	1,670	3%
Bergen (NJ)	500	2%	Queens	1,405	2%
Queens	440	1%	Kings	1,155	2%
Putnam	420	1%	Passaic (NJ)	1,140	2%
Bronx	315	1%	Pike (PA)	985	2%
Kings	295	1%	Morris (NJ)	975	2%
Wayne (PA)	245	1%	Sussex (NJ)	845	1%
Manhattan	215	1%	Hudson (NJ)	710	1%
Morris (NJ)	210	1%	Essex (NJ)	645	1%
Fairfield (CT)	185	1%	Fairfield (CT)	385	1%
Richmond	145	1%	Putnam	350	1%
All Others	1,863	6%	All Others	2,189	4%
Total	31,268	100%	Total	62,029	100%
Source: Census Transportation Planning Package 3-year data based on 2006-2008 ACS data By worker (not by type of vehicle or mode) Orange County residents working in Orange County = 116,375					

The increase in travel time to work is attributable to a combination of increased traffic congestion during peak travel times coupled with longer distance work trips by Orange County residents. For example, between the 2000 Census and the 2006-2008 American Community Survey 3-year estimate, the number of work related trips by Orange County residents to outlying counties increased by 12,563, and of these, 3,454 (27.5%) were to NYC. People are moving to Orange County from other counties in the region while maintaining their jobs in and around New York City. In part, the exceptional regional transportation system

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of highways and mass transit facilities allow people to live greater distances from their places of work. Overall, this results in a greater percentage of longer work trips and longer travel times.

Another factor affecting travel time is traffic congestion. As Orange County grows in population and employment, so do the overall vehicular trips for work, shopping and other purposes, thereby reducing available capacity while increasing traffic congestion and travel times.

In 1980 about 22% of Orange County residents worked in New York State outside of the County, and about 5% worked outside of New York State. The 2009-2013 American Community Survey 5-year estimates show that both of these figures had increased to 26.3% and 7.9% respectively. 72.8% of workers drove alone to work, and from 1990–2000 this category experienced an increase of 12%. Census data shows that carpooling has decreased over the years. In 1980, 22% of workers carpooled. By the 2009-2013ACS 5-year estimates, this number had dropped to 11.3%.

TRAVEL DEMAND AND MODES OF TRAVEL

Transportation facilities and services provide links between trip origins and trip destinations. Residential locations are often referred to as "trip production locations," and commercial and employment locations are referred to as "trip attractors." The sum of "productions" and "attractions" in travel corridors determine the total number of trips. The transportation modes that are feasible to connect different locations are determined by auto availability, development density, traffic congestion, quality and frequency of transit service, and parking availability and cost.

An overall estimate of non-commercial automobile travel can be computed using the number of single-family and multi-family housing units as a base. Defining a trip as a one-way movement from an origin to a destination (e.g., home to work), it is estimated that in 2011 approximately 1.30 million vehicle trips were made in Orange County per day; this number is estimated to rise to 1.75 million vehicle trips by the year 2040. These trips are currently made primarily by auto because, like many suburban locations in this country, Orange County's trip-generating residential land uses are spread widely across the landscape and transit service is limited. Simply knowing the number of potential origins and destinations in an area is helpful, but it is also necessary to determine the relative attractiveness between them to examine transportation needs. A number of sources have been used to obtain data about these connections.

The 2009-2013 American Community Survey 5-year estimates were used to produce the following data regarding work trips. Following the 2000 census, the "long form" (which was mailed to one-sixth of households and asked questions on a variety of topics) was eliminated, to be replaced by the American Community Survey (ACS). ACS data is also a sample of households—3.5 million households nationally participate in the ACS—but the survey data is collected by the Census Bureau on a continual basis, allowing more current data to be provided for smaller areas. This sample information is then extrapolated by the Census Bureau to generate estimates for the county and its municipalities. Areas over 65,000 in population have data collected every year; areas between 20,000 and 65,000 have data collected every year and then averaged together over a three-year period to provide more sample data, which is then provided to the public as a three-year estimate, and for areas smaller than 20,000 down to the block group level, five-year estimates are provided. This sampling method provides relatively current data on travel demand. Although the data are limited to work trips, this is helpful because it provides information on travel patterns during periods of maximum congestion. Also, these trips are of a routine and predictable nature and so might be served by transit. The census information was used to establish the proportions of work travel between different areas.

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At the County level, 2008-2012 ACS 5-year estimate data indicates that:

- 33.7% of daily work trips have both origin and destination within the County borders
- 41.2% of daily work trips are by County residents to locations outside County borders
- 25.1% of daily work trips are made into the County by non-residents

The existing ‘modal split’ of work travel provides insight into the current service provided by the different modes of travel in the transportation system (e.g., automobile, rail transit, bus transit, bike, pedestrian, air) as well as the relationship between land use and travel demand. Mode splits differ between in-county work trips compared with those leaving or entering the County for work. There are also differences related to the different densities of land use (e.g., city, villages, suburbs, and rural areas). Some interesting highlights (based on Census 2000 data as the ACS data has only been calculated for municipalities in excess of 20,000):

- More than 10% of the work trips made by residents of Towns of Blooming Grove, Chester, Monroe, Tuxedo, Warwick, and Woodbury are to New York City. Those six municipalities account for 57% of all Orange County resident trips to New York City.
- For these six towns, the predominant mode varies. Single occupant vehicle trips to NYC range from 27% for Tuxedo to 48% for Blooming Grove and Woodbury.
- For County residents in the workforce taken as a whole, 10.3% of the work trips are to New York City.
- Public transit accounted for 5.3% of county work trips. Another 10.9% carpooled.

The highest proportion of single-occupancy trips are generated by the suburban and rural areas of the county. The lowest proportion of work travel by single-occupancy vehicles is found in trips originating in Newburgh, Middletown, and Port Jervis, a reflection both of lower income levels in these areas as well as a higher density of development (it’s easier to walk to work, school, and other places in a city). There is a notable contrast in mode between work trips into cities compared with trips out of the cities. For example, 80 percent of the trips into the City of Newburgh are made in drive-alone autos versus 52 percent of the trips from the city. Because much of the current employment base has been developed outside of the cities, it can be difficult for city residents to get to such job locations if they are without a car and if there is no transit service to where the jobs are. Because of this situation, 19 percent from Newburgh carpool and 3.1 percent use taxi services.

Orange County is presently utilizing Job Access / Reverse Commute (JARC) funds from the FTA. The program transports low-income individuals residing in the inner cities of Newburgh and Middletown to employment opportunities in other areas of the county. Employment opportunities are with businesses that the Orange County Workforce Investment Board has identified as demand occupations. These include Warehouse/Distribution, Health Care and Manufacturing. The project uses leased vans to transport eligible individuals to employment, primarily on 2nd and 3rd shift work schedules. This service is delivered by the Orange County Employment and Training Administration; the FTA grant is administered by the Orange County Planning Department.

The American Community Survey data provide some insight into commuter trip patterns to New York City. However, the ACS questionnaire only allows one mode to be specified for each trip; therefore the proportion of multi-modal trips is unknown (e.g., car to the train or car to the bus).

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This situation is illustrated particularly well in the Village of Kiryas Joel, where census data indicate that 29% of workers walk to work. In all likelihood, many of these trips probably rely upon more than one mode since there are simply not that many jobs within the village itself and because other data shows substantial public transit use from the village to other locations within and outside of Orange County.

Walking to work is a more common mode of travel in more dense municipalities:

Town of Highlands	34%
Village of Kiryas Joel	29%
Town of Monroe	9%
City of Newburgh	8%
City of Port Jervis	8%
Village of Tuxedo Park	7%
City of Middletown	7%
Village of Chester	5%
Village of Warwick	5%

The American Community Survey walk-to-work data shows that these higher percentages of walking commuters are balanced by fewer walk-to-work trips in other municipalities. On average countywide, walk-to-work trips only encompass about 4% of all work-related trips. The greatest number of these trips is in the Town of Highlands where the US Military Academy at West Point is located. Of the 7,691 work trips, some 2,624 were pedestrian trips, representing 34% of all trips there.

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Orange County Residents - Journey to Work by Mode of Travel									
Geographic Area	Total Workers Age 16 and Over	Car, Truck or Van		Public Transit	Bicycle	Walked	Other	Work at Home	Mean Travel Time (min.)
		alone	carpool						
Orange County	170,241	123,906	19,169	8,038	289	7,357	3,176	8,306	33.3
Blooming Grove town	8,889	6,960	1,124	449	0	58	36	262	40.3
South Blooming Grove village	1,368	1,183	109	51	0	0	20	5	40.6
Washingtonville village	2,859	2,189	289	240	0	48	4	89	43.7
Chester town	6,163	4,713	471	388	0	138	0	453	37.8
Chester village	2,101	1,630	289	67	0	40	0	75	35.2
Cornwall town	5,955	4,815	307	227	0	214	23	369	32.3
Cornwall-on-Hudson village	1,603	1,163	88	123	0	126	6	97	30.6
Crawford town	4,589	3,657	553	67	0	66	46	200	34.5
Deerpark town	3,175	2,500	407	45	0	0	48	175	33.7
Goshen town	5,657	4,275	371	273	0	64	51	623	35.3
Goshen village	2,349	1,915	82	156	0	35	29	132	34.6
Greenville town	2,381	1,949	298	2	0	0	0	132	34.4
Hamptonburgh town	2,683	2,231	197	118	0	0	6	131	33.3
Highlands town	6,773	2,986	203	203	51	1,677	33	1,620	16.0
Highland Falls village	1,962	1,586	41	80	0	187	0	68	19.4
Middletown city	12,804	8,119	2,324	496	43	689	703	430	30.0
Minisink town	2,043	1,553	247	65	0	14	12	152	39.7
Unionville village	247	203	19	5	0	2	12	6	37.2
Monroe town	14,291	8,479	1,936	1,447	53	1,466	297	613	33.5
Harriman village (total)*	1,579	1,060	275	161	0	5	14	64	34.0
Kiryas Joel village	3,824	1,055	659	679	0	1,200	60	171	26.4
Monroe village	4,093	2,957	502	232	30	107	118	147	37.2
Montgomery town	10,953	8,597	1,458	314	0	305	71	208	33.7
Maybrook village	1,475	1,219	160	70	0	6	6	14	35.7
Montgomery village	1,795	1,338	271	89	0	31	46	20	38.7
Walden village	3,334	2,729	368	35	0	113	21	68	32.5
Mount Hope town	2,453	1,985	320	61	0	0	25	62	36.5
Otisville village	518	385	113	10	0	0	0	10	30.3
Newburgh city	11,378	5,763	2,468	554	71	1,080	1,093	349	23.6
Newburgh town	15,243	12,612	1,249	723	0	49	80	530	30.3
New Windsor town	12,406	9,902	890	682	0	347	190	395	36.6
Port Jervis city	3,302	2,342	344	45	0	336	118	117	24.5
Tuxedo town	1,783	1,348	67	237	0	16	1	114	36.8
Tuxedo Park village	262	160	14	43	0	16	0	29	44.7
Wallkill town	13,085	10,185	1,766	456	15	205	295	163	33.7
Warwick town	14,776	11,383	1,260	764	25	579	41	724	40.9
Florida village	1,395	1,017	185	81	9	50	13	40	38.7
Greenwood Lake village	1,543	1,196	152	96	0	26	0	73	40.9
Warwick village	2,468	1,936	187	94	16	175	0	60	37.7
Wawayanda town	3,726	3,186	331	29	0	34	3	143	29.9
Woodbury town	5,733	4,366	578	393	31	20	4	341	40.6
Woodbury village	5,336	4,023	551	370	31	20	0	341	40.8

Source: 2009-2013 American Community Survey 5-Year Estimates, Table B08301 Means of Transportation to Work; mean travel time from Table DP03 Selected Economic Characteristics

Note: Town totals include Village totals; the Village of Harriman is split between the Towns of Monroe and Woodbury, but is included under the Town of Monroe heading for simplicity. If needed, data can be produced for the portions of the Village of Harriman within each Town.

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The roadway network in Orange County includes more than 2,800 centerline miles of roadway. The roads that comprise the network fall under the jurisdiction of the New York State Department of Transportation (NYSDOT), New York State Thruway Authority (NYSTA), Orange County, and its forty two municipalities. Over 65% of the roadway mileage in Orange County is under the jurisdiction of municipal governments. NYSDOT has jurisdiction for about 14% of the mileage; Orange County about 11%.

The highway system in Orange County serves travel by automobile, freight movement by truck, and transit movement by bus. Travel by individual vehicle is the dominant transportation mode in Orange County.



Hawk's Nest, Port Jervis

FUNCTIONAL CLASSIFICATION

Functional Class	Description	Centerline Miles	Percentage
1	Rural Principal Arterial Interstate	13	0%
2	Rural Principal Arterial Freeways/Expressways	8	0%
4	Rural Principal Arterial Other	23	1%
6	Rural Minor Arterial	34	1%
7	Rural Major Collector	17	1%
8	Rural Minor Collector	29	1%
9	Rural Local	333	12%
11	Urban Principal Arterial Interstate	85	3%
12	Urban Principal Arterial Freeways/Expressways	89	3%
14	Urban Principal Arterial Other	221	8%
16	Urban Minor Arterial	230	8%
17	Urban Major Collector	266	9%
18	Urban Minor Collector	7	0%
19	Urban Local	1501	53%

Maintenance Jurisdiction	Total Centerline Mileage	Percentage
NYSDOT	443	16%
Orange County	306	11%
Town	1375	48%
City or Village	467	16%
State Parks	10	0%
Other State Agencies	17	1%
Other Local Agencies	3	0%
NYS Thruway Authority	31	1%
Army	199	7%
Other	5	0%

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Functional classification establishes a hierarchy of highways. This hierarchy is a valuable planning tool because it defines roadway function.

Non-Limited Access Arterial System

The non-limited access arterial system includes four categories of roadway; a mix of two-lane and four-lane roadways with a variety of design standards. Arterials are intended to move through traffic, not local service. Having a lot of development along arterials compromises the ability to move through traffic. Adding local trips to through trips on an arterial causes congestion and safety problems. Access management practices are intended to address these issues. In many cases, past (and current) land use decisions have led (and are leading) to congested arterials with many commercial curb cuts, and sometimes even residential driveways. All of these things reduce the ability to carry through traffic smoothly. This type of congestion is common along NYS Routes 17K and 300 in the Town of Newburgh, NYS Route 211 in Wallkill and numerous other locations.

Collector System

In urban areas, the collector system may service land identified for residential purposes as well as providing connections between local streets in residential neighborhoods and the arterial system. In rural areas, the collector routes generally serve intra-county travel rather than through travel. Examples of urban collectors are West Street and Carpenter Avenue in the City of Newburgh.

Local System

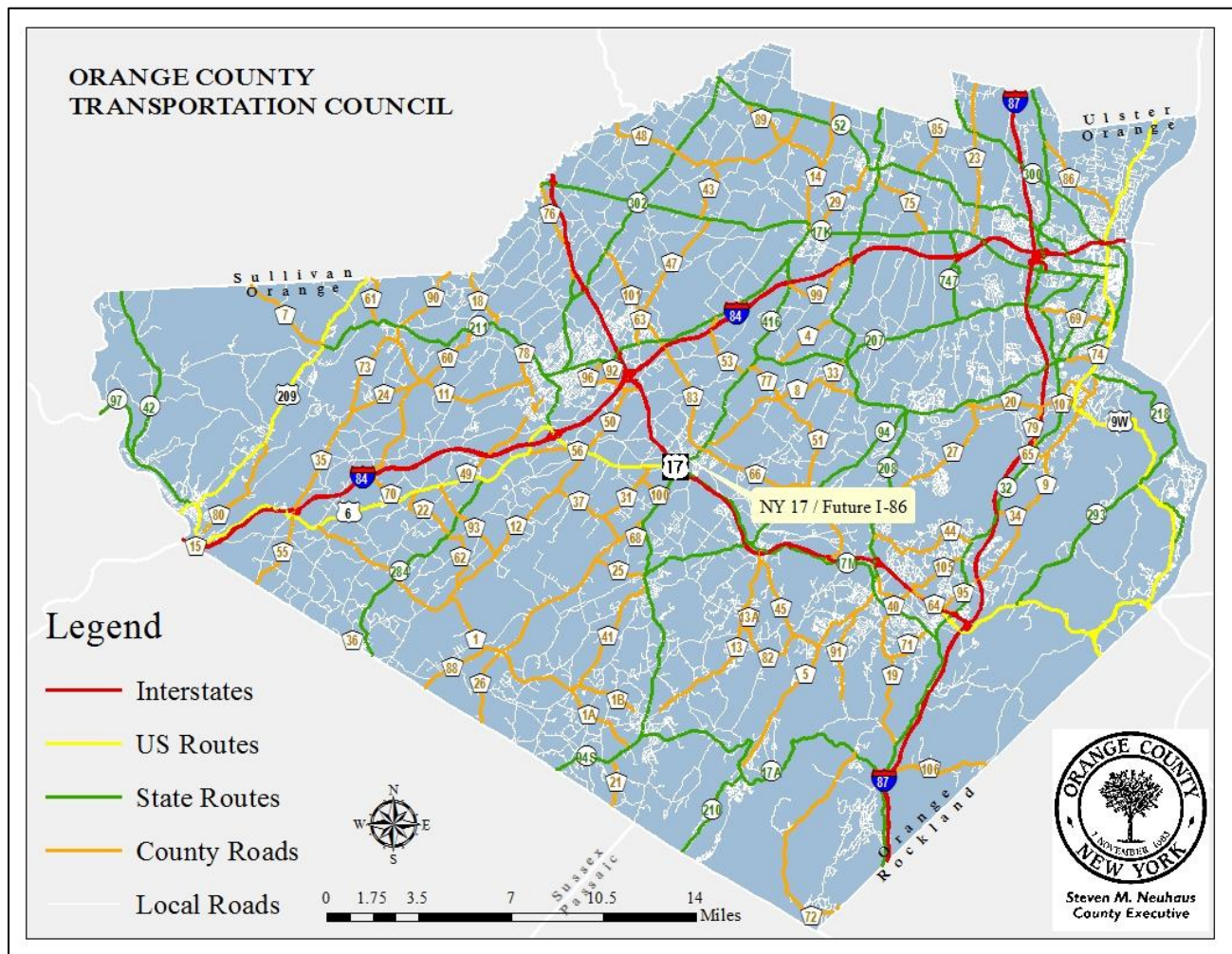
The primary function of local roads is to provide access to land. A secondary function is to serve short trips. Service for through traffic on these streets is generally inefficient. If there is heavy congestion on higher functional class facilities, local roads sometimes become short cuts. This can result in reduced safety and quality of life. This activity seems to be frequent on Old Temple Hill Road in Vail's Gate, Dolsontown Road in Wawayanda and Cheechunk Road in Goshen.

The Federal Aid System is, by definition, all roadways which are eligible for Federal Aid. This typically includes all roadways in urban areas, except those classified as local, and all roadways in rural areas except those classified as minor collector or local. The Federal Aid System classification accounts for 646 miles of highway in the County, or about 27 percent of the total mileage. These highways are the higher volume highways and carry the vast majority of the annual vehicle miles of travel in Orange County. All publicly owned bridges carrying public roads are eligible for Federal Aid.

National Highway System (NHS)

Under MAP-21 an increased emphasis has been placed on NHS pavement and bridge conditions, and congress has directed a higher percentage of funding to the NHS. Mileage was added to the NHS under MAP-21 as all roads with Functional Classification of Principal Arterials are now NHS. In 2014, several state highways in Region 8 were re-classified as Principal Arterials and added to the NHS, including two in Orange County.

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INTERSTATE HIGHWAY SYSTEM

The County is served by two major limited access interstate highways -- The New York State Thruway (I-87) and I-84. Route 17 is a limited access highway on the National Highway System that may eventually be designated as I-86 as it is reconstructed to meet Interstate standards. The Thruway provides some north/south circulation in the eastern part of the County, and has interchanges at Route 17 / 32 (Harriman) and I-84 / Route 300 (Newburgh). In addition to the major regional through traffic on Thruway, local trips are utilized between the two state highways. Therefore, it tends to be used more for longer-distance through trips. Routes 17 and I-84 provide more of a combination of localized service and long-distance service because they both have more frequent interchanges. I-84 is recognized as one of the primary commercial spines of the County.

ROUTE 17 TO I-86 CONVERSION

NYS Route 17 serves as the primary east-west highway corridor across the southern part of the State, from the NYS Thruway interchange in Harriman west to Interstate 90 near Erie, Pennsylvania. The section within Orange County and stretching to Binghamton is known by many as the "Quickway". It was constructed in

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sections over the course of many decades beginning in the 1920's. Through the efforts of former Senator Daniel P. Moynihan, federal transportation legislation included authority for the re-designation of Route 17 as Interstate 86 as sections are reconstructed to meet interstate standards. The most recently built sections in the western parts of the state were initially constructed to meet those standards, however, the older sections will require significant redesign and reconstruction before they can be designated as part of the Interstate System by the Federal Highway Administration. The NYS Department of Transportation is in the process of carrying out limited segments of this I-86 conversion project.

The first 177 miles of Route 17 between the Pennsylvania State line and Exit 48 in East Corning were designated as Interstate 86 in December 1999. As of 2014, more than half of NYS Route 17 had been upgraded to federal interstate standards, with 215 miles designated and 165 miles remaining. Because of funding concerns and cost the conversion plan has been adjusted in the short term to address the sections of Route 17 with at-grade intersections providing a true limited access route prior to a complete conversion to I-86.

Route 17 in Orange County is a limited access facility. The series of projects to convert Route 17 to I-86 previously planned has been revised to reflect the changes to the statewide I-86 program. The new program for Route 17 includes the following:

- Reconstruction of Route 17 from the Sullivan County line (Route 17K) to I-84 to Interstate standards. Completed.
- Reconstruction of Exit 122 in the Town of Wallkill. Stage 2 is under construction and was expected to be completed in October 2015; Stage 3, the final stage, is planned for post 2018.
- Interchange reconstruction at Route 17 Exit 131 (Route 32, Route 6, and I-87), PIN 8006.84, in 2017.
- Undertake Route 17 Transportation Study to develop a future scope for Route 17 improvements which may include transit and other TDM improvements, widening to six lanes, and possible sustainable land use changes. All Route 17 projects are being designed to not preclude future improvements. Completed

The Orange County Transportation Council approved a resolution in 2015 to support the conversion of Route 17 to I-86 on the completed section between Route 17K and I-84. All future Route 17 beyond-preservation improvements will depend upon there being adequate future funding.

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

The New York State Department of Transportation's Region 8, a seven county region, which includes Orange County developed a five year preservation emphasis capital program for April 2012 through March 2017 based upon *Strategies for a New Age: New York State's Master Plan for 2030*, the long range plans of its four metropolitan planning organizations, and anticipated flat federal transportation funding. The five year program emphasized preserving the existing infrastructure and keeping the National Highway System (NHS) and other critical transportation links in satisfactory condition. In 2013, NYSDOT further implemented these strategies in FFY 2014 – FFY 2018 MPO TIP Updates.

Region 8's strategy for its previous five year program was to maintain the Trade and Commuter corridors in satisfactory condition; maintain other corridors as well as resources permit; improve safety; improve mobility/reliability by deploying Intelligent Transportation Systems (ITS), expand Transportation Demand

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Management (TDM) and transit, continue emphasis on sustainable development, and making limited capacity improvements; and improve the environment.

The current program concentrates on preserving bridges, pavements, culverts, and other components of the state highway infrastructure such as guiderail, pavement markings, traffic signals, signs, and drainage. It also emphasizes safety and environmental responsibility. As this program is a transition from the previous corridor based program to a program that seeks to preserve what we have emphasizing the NHS (expanded under MAP-21 and by recent additions), a limited number of lower cost non-preservation projects from the previous program which are far along in development, have a private funding commitment, or are sustainable development projects where towns have changed their land use policies have been retained. The other non-preservation projects retained are bridge rehabilitations and replacements.

INFRASTRUCTURE

Pavement

To address goals of preserving pavements with a focus on Interstate and other NHS roads, NYSDOT employs a strategy that includes crack sealing to minimize water penetration in the pavement and prioritizing candidates based on a lowest cost per vehicle miles traveled. In this approach higher volume roads will be maintained in good condition and over time funds will become available to bring lower volume roads in good condition and maintain them there. Roads with candidate treatments that have high cost per VMT ratios due to low volumes will be treated with as funding allows when the condition drops to a Poor level.

In Orange County there are 1,081 lane miles of state highway which had Average Surface Score in 2013 of 7.18. Of this, 6.2% was scored as Poor Pavement. Other Infrastructure includes signs, pavement markings, guide rail, culverts, lighting, drainage, and roadside features (trees, vegetation). The strategy is to preserve these features.

Bridges

There are 458 public roadway bridges in Orange County. Of these, 201 are owned or maintained by NYSDOT and 259 are owned by others. Overall, 46% of the bridges in the County have some level of deficiency rating (44.2% of the NYSDOT owned bridges, 47.3% of the other bridges). NYSDOT maintains 7 bridges that are owned by the Palisades Interstate Parks Commission, 3 of which (43%) are deficient.

The NYSDOT Bridge Strategy is to extend the service life of existing bridges as long as possible and to rehabilitate or replace only when a bridge can no longer be economically preserved. Emphasis is on preserving bridges on the NHS.

Bridge Strategy Objectives:

- No load posted or “R” rated bridges on trade corridors
- No load posted bridges on commuter corridors
- All critically deficient bridges addressed
- No load posted bridges on critical commercial corridors
- Low volume/low criticality bridges may be load posted

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- 10% deficient carrying trade corridor routes
- 20% deficient carrying commuter corridor routes
- Remainder of Principal Arterials, Minor Arterials, and Local held at best % deficient can.

How to Accomplish the Bridge Strategy:

- Bridges carrying trade routes are prioritized for preventive maintenance work and potentially more extensive repairs
- Bridges carrying commuter routes are prioritized for preventive maintenance work and potentially more extensive repairs
- Critically deficient bridges are identified and prioritized based upon corridor type, traffic volume, and criticality
- Bridges on commercial corridors are prioritized on the basis of criticality to truck access to businesses
- All bridges will be washed and sealed on cycle
- Bridges that are paint critical, such as trusses and other structural components not under a deck, will be painted on reasonable cycle, recognizing the ongoing problems with containment and paint durability. For components under a deck the focus would be on keeping joints watertight.
- As many bridges as possible will be brought to a non-deficient condition by NYSDOT-designed contractor-performed maintenance (under the Maintenance By Contract (MBC) and Job Order Contract (JOC) programs).
- Long span bridges will receive specific attention because of their high cost to replace.

The estimated cost of carrying out the work in sub-paragraphs e, f, g, and h above amounts to \$35 million annually. Addressing bridge emergency needs costs about \$4 million annually.

While not in Orange County, the Tappan Zee Bridge, owned by the New York State Thruway Authority, is currently being replaced with a new, twin span bridge. The New NY Bridge Project is scheduled to be complete in 2018. The new bridge will be designed and constructed to last 100 years without major structural maintenance. The New NY Bridge will mean less congestion for motorists, with eight traffic lanes, four breakdown/emergency lanes, and state-of-the-art traffic monitoring systems, as well as a dedicated commuter bus lane from the day it opens. Designed and constructed to be mass-transit-ready, the new crossing will be able to accommodate bus rapid transit, light rail or commuter rail. The bridge will also include a bike and pedestrian path.

In addition to the aforementioned bridges, the New York State Bridge Authority owns and operates two bridges which serve Orange County. The Bear Mountain and Newburgh-Beacon bridges provide essential access across the Hudson River and link Orange County with Dutchess, Putnam and Westchester Counties. Over the next several



*Above: Tappan Zee Bridge Construction
Below: Proposed Pedestrian and Bicycle Paths*

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years in addition to general maintenance to keep both bridges in a state of good repair, the Bridge Authority plans to repave the approaches to the Newburgh-Beacon Bridge and re-deck the north span (the south span re-decking is scheduled to be completed in 2015). At the Bear Mountain Bridge, the Authority plans to spot clean and paint the towers, stiffen trusses, and replace the main cable safety hand ropes. Currently, there are no plans to change the capacity of either bridge or add additional bridges to serve Orange County.

MOBILITY AND RELIABILITY

NYSDOT Region 8's strategy for mobility/reliability is to preserve the NHS; selectively supplement the ITS instrumentation already in place and actively operate the system; address railroad grade crossing problems; and continue, maintain, and expand its Travel Demand Management (TDM) programs including ongoing collaboration with agency partners and regional operators.

This strategy seeks to preserve the existing highway system and optimize operations to address the areas of recurring congestion in Orange County identified by the OCTC's congestion management process. The Department's intent is to use Intelligent Transportation Systems (ITS), TDM, and limited operational or capacity improvements from the transitional projects to ameliorate some recurring and non-recurring congestion and via safety programs reduce non-recurring congestion by reducing the amount of congestion caused by accidents.

INTELLIGENT TRANSPORTATION SYSTEMS

Ongoing technological advances are expected to improve the management of congestion, the capacity of roadway systems, and potentially reduce travel demand. These advances as a group are identified as Intelligent Transportation Systems (ITS). A study evaluating ITS in the Lower Hudson Valley has been prepared for NYSDOT Region 8 entitled "Hudson Valley Intelligent Transportation Systems Business Plan and Development Concept". The Plan provided a framework for providing real-time traffic and traveler information in the Lower Hudson Valley region for the highway and public transportation system.

Currently, NYSDOT Region 8 operates a Transportation Management Center (TMC) in Hawthorne, Westchester County, which became operational in 2004. The deployment of ITS has initially been in the lower Hudson Valley. Critical locations in Orange County such as the Hudson River crossings and interchanges of the Thruway with I-84 and Route 17 and Route 17 with I-84 have been instrumented.

Intelligent Transportation Systems are comprised of a combination of the following subcomponents:

Advanced Traffic Management Systems (ATMS)

Focusing on managing the system to maximum capacity, ATMS involves using advanced technologies to advise travelers of current conditions and alternate routes (using communication systems such as highway advisory radio, changeable message signs, kiosks, and tele-text), improving emergency response and providing coordinated interagency traffic management.

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Advanced Traveler Information Systems (ATIS)

These systems provide on-board navigation information that can provide route selection capabilities via satellite and other communications. ATIS also possesses the ability to relay congestion and accident information and provide alternate travel routes based upon current location and destination.

Commercial Vehicle Operations (CVO)

This is a program that restricts the hours of operation of commercial vehicles (restricting use in commute periods) and the facilities on which commercial vehicles may travel. It also involves use of advanced technologies to establish route choices for commercial vehicles to avoid incidents.

Electronic Toll Collection (ETC) and Automated Vehicle Identification (AVI)

These systems allow for automated toll collection and vehicle identification which expedites vehicles through toll areas, thus easing congestion, improving capacity, reducing bottlenecks, and improving air quality. An example of an ETC system is the E-Z Pass system.

Advanced Vehicle Control Systems (AVCS)

These systems include on-board and in-road guidance systems to maximize the speed, minimize the spacing, and control merge / diverge movements of vehicles. Vehicles are actually controlled by outside systems in order to maximize the capacity of a roadway segment.

Advanced Public Transportation Systems (APTS)

These are systems intended to enhance the capabilities of public transit in four major areas: increase the market share of transit and ride sharing; improve safety and security on transit systems; reduce operating costs and increase revenues for transit systems, and; assist transit agencies in the response to legislative mandates, such as Clean Air Act Amendments of 1991 and the Americans with Disabilities Act.

Wide-Area Information Network System (WINS)

The New York State Energy Research and Development Authority is studying the capabilities of a real-time travel information system that would provide warnings on congestion and incidents using a new type of E-Z-Pass transponder. This system is called New York Wide-Area Information System or NY-WINS. If successful, this system could be extended to the Thruway and I-84 in Orange County.

Traffic Signal Systems

Advanced traffic signal systems consist of interconnected signals and loop detectors that are connected to computer systems that respond to changes in traffic demand. Candidate locations should be evaluated in Middletown, Port Jervis, and Newburgh. Other possible locations for these systems would be Routes 17K, 9W, 211, 32, 207, 52 and 17M.

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Application of various ITS actions in Orange County was also evaluated in the Lower Hudson Valley report based on interviews and surveys conducted during the study. The highest ranking was for improvements in traffic control systems. Other high-ranking actions included Traveler Service Information, Public Transportation Management, En Route Transit Information, Public Travel Safety on Transit Systems, On-Board Safety Monitoring for Commercial Vehicles, and Emergency Vehicle Management. The County should evaluate how these actions can be taken in the context of future ITS studies in the Lower Hudson Valley.

The ability to quantify the potential reductions in current transportation demand through these alternatives will require more detailed modeling efforts. There have been some national studies to quantify the benefits of these systems. The report, “Intelligent Transportation Infrastructure Benefits: Expected and Experienced”, provided estimates of positive impacts of ITS on various transportation measures of effectiveness. The report stated that arterial traffic signal systems could reduce travel time by 8-to-15 percent and reduce fuel consumption by 6-to-12 percent. Other types of ITS technology were forecast to produce significant savings as well. [NYSDOT is currently updating the ITS architecture plan.]

The Region’s strategy will be to continue rolling out ITS following the program originally outlined in its Early Deployment Plan and followed up in the *Hudson Valley Intelligent Transportation Systems Business Plan and Development Concept*. The plan identified the critical network for diversion of traffic approaching the mid-Hudson Valley from the north, west, and east. Traffic approaching from the south needs to be diverted in New York City.

It is anticipated that this implementation will be slowed due to funding constraints and the need to keep bridges and pavements in satisfactory condition. As more privately developed traffic applications are made available to the public the role of the public sector in gathering and providing traffic information is being rethought. This may also slow public investment in ITS.

The general strategy is to use I-84 as the northern distributor of traffic from the north, east, and west among the various north/south corridors. The Cross County Parkway would be the southern distributor and I-287 the middle distributor. Variable message signs would be located in advance of these diversion points on the north/south and east/west facilities to allow diversion. All limited access facilities from I-84 south to New York City would need to be instrumented so traffic conditions could be monitored in real time.

NYSDOT is developing multiple projects on I-84 in Orange, Dutchess and Putnam Counties to deploy Variable Message Signs, traffic detection, and closed circuit cameras. In Orange County the project limits of PIN 8062.42 will be between Route 17 and I-87. PIN 8062.43 will begin at I-87 and extend to Route 9 in Dutchess County. Two additional project will continue the ITS implementation through Dutchess County to I684 in Putnam County. The current schedule has all four projects being let together in 2017, however there will be flexibility to phase the implementation of the projects if needed due to funding concerns.

SAFETY

The objectives of the Region’s strategy are to prevent transportation system related fatalities and injuries. This will be accomplished through infrastructure improvements both spot and systemic, operational improvements, and through human factor based education and enforcement initiatives.

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The strategy is driven by a continuous analysis of accident statistics for the state highway system. The Region investigates locations with a significantly higher than average accident rate. The recommendations from these accident investigations are then used to implement changes to improve safety by NYSDOT maintenance forces or by contract. Reinforcing this would be specialty programs including the Skid Accident Reduction Program (SKARP) to address unusually high patterns of wet-road accidents and mowing/tree/brush/sight distance clearing projects to maintain safe sight distances. Railroad grade crossings because of their potential for injury and fatal accidents would also receive emphasis. Systemic safety improvements approved by the FHWA will be implemented where appropriate, e.g. Centerline Audible Roadway Delineators (CARDS), and Pedestrian Countdown Timers. Supplementing these efforts would be specific physical improvements by maintenance, inclusion of safety improvements in capital projects, and normal safety projects.

NEW YORK STATE THRUWAY AUTHORITY

Short Term

The Authority is in the beginning of its 2015-2019 multi-year Capital Plan, which includes the New NY Bridge project. The Capital Plan is a major component to continue to provide high levels of safety and service, and maintain good highway and bridge conditions system wide.

Projects for the next few years will concentrate mainly on preservation of the existing system features. They include element specific bridge projects to maximize preservation of existing infrastructure along with seven anticipated bridge replacements. Continuing with completion of the Authority's multi-year Capital Plan in this TIP cycle, together with the Authority's ongoing extensive and regular maintenance programs, will ensure that the operational and structural integrity of the Authority's facilities are maintained.

Mid and Long Term Thruway Planning

Preservation of the highway and implementation of various improvements does not complete the process. The Thruway Authority will continue to look for opportunities for further improvement in operations, as well as staying up-to-date with the current technologies, construction, maintenance, and roadside safety practices. The Authority will continue to be involved in the MPO process by participating in the area studies developed in the UPWP, updating the TIP, and contributing to other actions of the organization.

While specifics have not been developed for the long term, the Authority recognizes its role in the transportation network to provide acceptable levels of service (LOS) for its highways in the region. We will continue to look for new innovations in optimizing the use of the existing infrastructure to handle the increased demand of traffic. The Authority will consider making improvements to address LOS needs and as funding may allow. This may include consideration of improvements on I-87 in the vicinity of Interchange 15 in Suffern to Interchange 16 (Woodbury Toll Barrier), and/or improvements on I-87 from Woodbury Toll Barrier to several miles north.

Utilizing new advancements in toll collection technology, intelligent transportation technologies, traffic monitoring, incident response, and vehicles themselves will play a major role in maintaining adequate LOS. Improving the highway and its operation, while minimizing the impact to the environment, is a challenge the Authority takes seriously, and will continue to do so in the future.

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Transportation authorities and private toll facility operators are increasingly turning to All Electronic Toll Collection (AETC) to reduce congestion, improve safety and reduce air pollution. More than 35 bridges, tunnels and toll roads across the nation are now using AETC, including San Francisco's Golden Gate Bridge, and nearby, the Henry Hudson Bridge, which connects the Bronx to Manhattan. The New NY Bridge project is among the approximately 13 additional facilities nationwide that will implement AETC in the future.

As many Tappan Zee Bridge travelers know, the existing toll plaza is often congested during peak travel periods. By contrast, the AETC system promises to significantly improve traffic flow by collecting tolls at highway speeds. In addition, the new system will improve local air quality because vehicles no longer will idle in lengthy toll-collection lines. The AETC gantry will carry cameras and other equipment that will enable tolls to be collected at highway speeds, thereby reducing traffic delays, improving safety and cutting air pollution. The temporary AETC system will be tested in 2015 and is scheduled to be implemented in 2016.



Tappan Zee Bridge



*Woodbury Highway Speed E-Z Pass
Photo Credit: Foit Albert Associates*

What's more, all-electronic tolling will enhance safety. Traditional toll plazas experience higher-than-average numbers of crashes because motorists traveling at varying speeds often change lanes abruptly seeking the shortest queue. As an example of how AETC improves safety, the Florida Turnpike experienced a 37 percent decline in accidents during the first year after removing toll plazas at one location in 2011. Beyond the risks and expenses that toll-plaza crashes impose on individual travelers, they inflict additional congestion burdens on all travelers.

ORANGE COUNTY DEPARTMENT OF PUBLIC WORKS

Orange County owns and maintains approximately 306 centerline miles of roadway. With the exception of a few roads, all County roads are two lane roads. Generally, County roads connect to other County roads or State roads. Orange County also owns and maintains 151 bridges.

Highway Projects

Short Term Need Projects

- Old CR 6/Finnigan's Lane – Drainage Improvement project
- CR 31 (Maple Ave) – Drainage Improvement project

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- Various Traffic Light Upgrades
- CR 96 and Wisner Avenue – Intersection Improvement project
- CR 1A, CR1 and Blooms Corners Road – Intersection Improvement project

Medium Term Need Projects

- CR 89 at Searsville Road. Sight distance improvement project.
- CR 6 and CR 25 intersection – Sight Distance Improvement Project.
- CR 1 and CR 12 intersection – Intersection Improvement Project

Long Term Need Projects

The County is administering the preliminary design for an extension of Larkin Drive north from its current terminus CR 105 to NY 208. The idea for this proposed 1.75 mile roadway extension stemmed from the Southeastern Orange County Traffic and Land Use Study and would provide a vital link in this the transportation corridor, which will upgrade transportation and emergency access. This road will be a direct access road to commerce along the existing Larkin Drive corridor, as well as provide relief to NY 17 (future I-86) east during peak commuting times. A very preliminary cost estimate for this road is approximately \$33M. Given the current fiscal constraints, no funding for the construction of this new roadway capacity has yet been identified. At such time that funding may be found, this project would need to be added as a non-exempt project to both TIP and Plan and incorporated into an updated air quality conformity analysis.

County Bridge Projects

Short Term Need Projects

<u>Project</u>	<u>Type</u>	<u>Cost estimate</u>
Cornwall Bridge	Replacement	\$ 740,000
Ford Bridge	Replacement	\$ 740,000
Rutgers Glen Bridge	Replacement	\$ 740,000
Scotchtown Avenue Bridge	Replacement	\$ 5,170,000
Maple Glen Bridge	Replacement	\$ 840,000
Otisville Viaduct	Replacement	\$ 1,500,000
Gardnerville Bridge	Replacement	\$ 1,600,000
Main Street Bridge #2	Replacement	\$ 1,725,000
Main Street Bridge #1	Replacement	\$ 1,500,000
Shawangunk Lake Bridge	Replacement	\$ 2,000,000
Grove Drive Bridge	Replacement	\$ 2,400,000
Dwaar Kill Bridge	Replacement	\$ 640,000
Logtown Bridge	Replacement	\$ 740,000
Horan Bridge	Replacement	\$ 600,000
Orange Farm Bridge	Replacement	\$ 640,000

Medium Term Need Projects

Approximately \$3.5 million worth of projects (approximately 3 per year).

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Long Term Need Projects

Approximately \$3.5 million worth of projects (approximately 2 per year).

COUNTY PAVEMENT MANAGEMENT SYSTEM

The Department of Public Works carries out a pavement management system for highways under the authority and jurisdiction of Orange County. The County pavement management program is a combined field observation and computer system that results in rating of the roads. The rating is on a scale from 0 to 100.

HIGHWAY SAFETY AND ACCIDENTS

A major component and requirement of the Highway Safety Improvement Program (HSIP) under SAFETEA-LU and now MAP-21 is a statewide Strategic Highway Safety Plan. In an effort to reduce the frequency and severity of automobile crashes, federal, state and local traffic safety organizations combined their efforts to create the 2010 NYS Strategic Highway Safety Plan. The plan uses a comprehensive approach that focuses on perpetual improvement in the areas of: engineering, education, and enforcement. A central focus of the 2010 NYS Strategic Highway Safety Plan is to reduce fatal and serious injury crashes. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance.

A high crash location is defined as a location which exhibits an abnormally high percentage of crashes compared to other locations with similar roadway classifications. Identifying high crash locations within Orange County will specify which areas of the transportation network need improvement. Studying the design of the deficient segments will help determine what actions are needed to rectify the problem and prevent future hazardous conditions.

The reduction of high accident locations and the reduction of fatal and serious injury crashes is inherently based on identifying and tracking the locations. Over the last several years NYSDOT has been working to implement a system that will provide comprehensive geographic crash data for the state and local roadway systems. There are three major components of this system: Traffic and Criminal Software (TraC's), Accident Location Information Systems (ALIS) and the Post Implementation Evaluation System (PIES).

Traffic and Criminal Software (TraC's)

This system has become the way the New York State Police and over 400 other police agencies in New York do business. Police officers today across New York write tickets and accident reports on a computer in the patrol car, print copies for the involved citizens, and electronically transmit the data to the courts, and involved state agencies. Officers can also complete a magnitude of law enforcement forms in the vehicle and import case data directly into their records management system.

The New York State Police has taken the lead in the TraC's program and currently, there are over 400 agencies using TraC's and transmitting data electronically. Each year, TraC's transmits over 2,000,000 traffic citations and 200,000 crash reports. Electronic transmissions of tickets and crash reports continue to grow, breaking all previous records. The TraC's team continues to add forms and functionality to TraC's. This program has been successful due to the continual efforts and coordination of New York State Police,

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Governors Traffic Safety Committee, Department of Motor Vehicles, Office of Court Administration, Department of Transportation and several other governmental agencies. The implementation of new forms and the distribution of new technology have not only increased productivity and enforcement but have also made our roadways safer for all those that live and travel throughout New York State. The new and improved version, “TraC’s 10” has been released and is in the process of being customized for New York State and due for release towards the end of the year.

Accident Location Information Systems (ALIS)

The Accident Location Information System is comprised of three applications. One application is used exclusively by the Department of Motor Vehicles to geographically locate highway crashes. This application is capable of utilizing a variety of different location elements that can be entered on a crash report to translate these different location elements into a universal coordinate location that can be used in a variety of GIS applications. Another application lets users do simple queries/reports and allows for the refinement/correction of crash locations in older legacy data. By using this application the Department of Transportation can significantly improve the precision/accuracy of where legacy crashes are located. Additionally, a third application allows users to do more complex queries/analysis functions involving both geographic features in combination with multiple crash characteristics at the event, vehicle and contributing factor levels. The query/analysis capabilities of ALIS are used by highway safety professionals at both the state and local (county, MPO, city, town and village) levels to identify crash histories at specific sites as well as sites with unusually high crash experience. The application is currently being upgraded to improve performance and workflow. The new version is expected to be released sometime next year.

Post Implementation Evaluation Systems (PIES)

This application offers actual before and after evaluations allowing:

- Verification that projected accident reductions reported as part of the New York State Department of Transportation’s Safety Goal are reasonable and accurate;
- Quantitative measurements of the effectiveness of the NYSDOT’s overall capital program in improving highway safety (reducing accidents and safety benefit cost ratio);
- Continued development of new accident reduction factors for innovative accident counter measures (shoulder rumble strips, roundabouts, and pavement surface treatments); Significant reduction in the manual effort currently required for doing before/after evaluations for individual projects and NYSDOT programs.

These new systems will be used to increase safety and efficiency on the transportation network. Identifying high accident locations and implementing solutions will allow for the strategic elimination of hazardous sections of the transportation network.

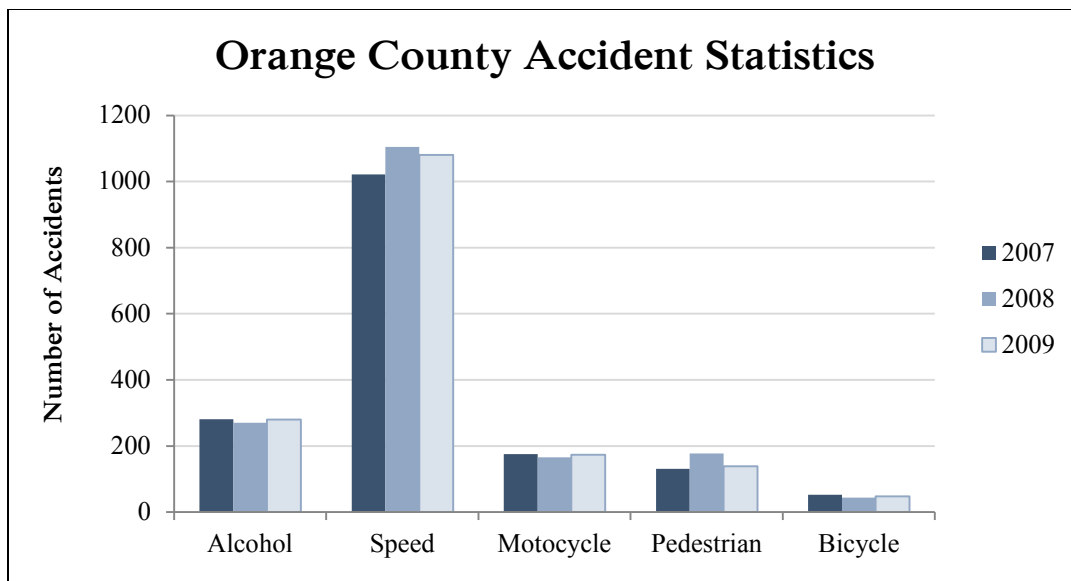
According to the statistics below, total crashes in New York State slowly decreased from 323,106 in 2007 to 314,974 in 2009. Total crashes in Orange County decreased slightly in 2008 from the 10,000 crashes in 2007 but then increased to 10,427 in 2009.

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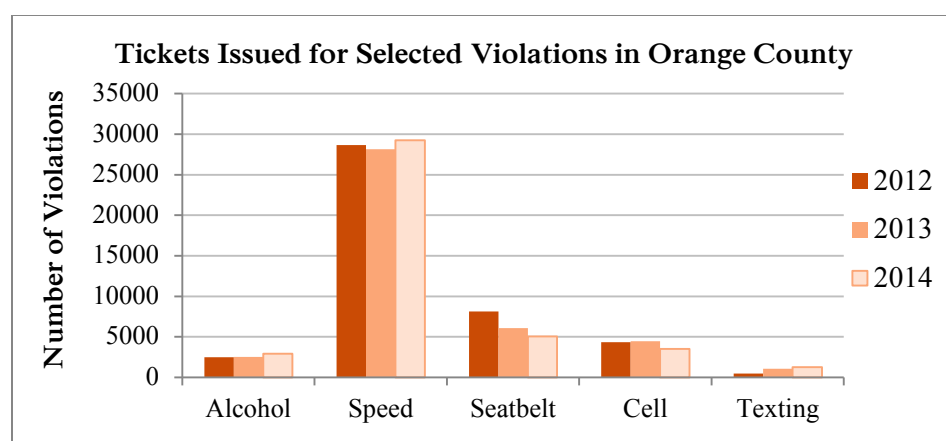
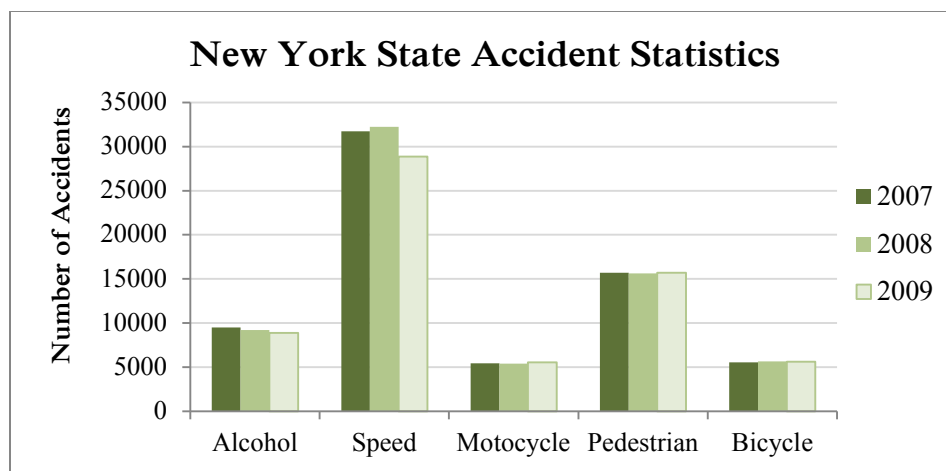
Orange County Statistics			
	2007	2008	2009
Alcohol Related	281	270	280
Speed Related	1,022	1,105	1,081
Motorcycle Related	175	166	173
Pedestrian Related	131	177	139
Bicycle Related	52	44	48
Total Accidents	10,000	9,914	10,427

New York State Statistics			
	2007	2008	2009
Alcohol Related	9,480	9,202	8,873
Speed Related	31,729	32,234	28,877
Motorcycle Related	5,426	5,396	5,550
Pedestrian Related	15,701	15,620	15,682
Bicycle Related	5,535	5,646	5,620
Total Accidents	323,106	316,231	314,974

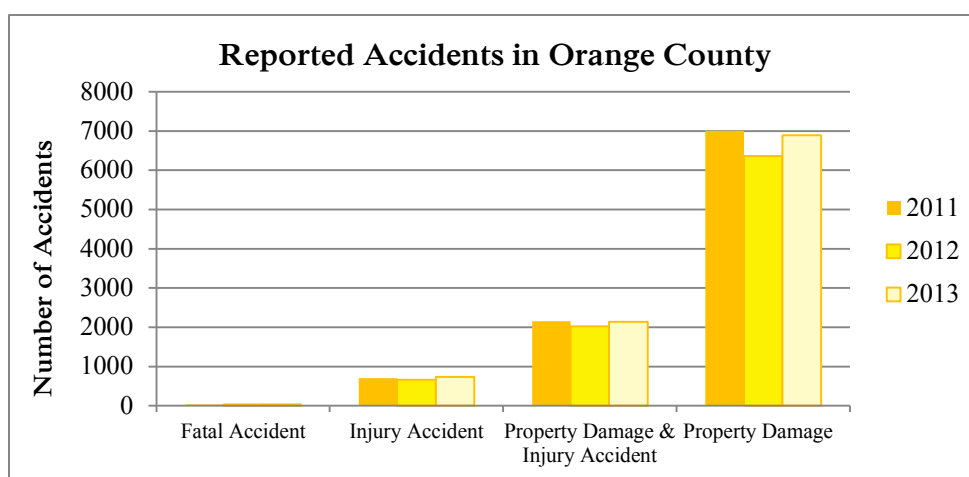
When comparing percentages, on average, alcohol related crashes accounted for 2.7% of all crashes in Orange County. This figure is consistent with the 2.9% of crashes involving alcohol in New York State. Crashes involving motorcycles accounted for 1.7% of all crashes in New York State as well as Orange County. Crashes involving pedestrians were significantly less in Orange County at 1.5% of all crashes compared to 4.9% in New York State. This trend is also seen in crashes involving bicycles, which account for only 0.5% of all crashes in Orange County and 1.8% of crashes in New York State. The New York State Association of MPOs created a Safety Working Group in 2006. OCTC staff have monitored NYSMPO Safety Working Group activities, which have identified several goals and objectives to advance safety initiatives including providing input on the development of the State's Strategic Highway Safety Plan (SHSP).



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Total tickets issued (for selected violations) in Orange County decreased from 44,051 in 2012 to 41,964 in 2014. On average, 67.1% of the tickets issued for these selected violations were speed related. The greatest decrease in violations came from seatbelt violations, from 18.5% in 2012, to 14.3% in 2013, and then to 12% in 2014.



The most recent Accident Data (data.ny.gov) from 2011 – 2013 shows the most common types of accidents in Orange County. For these three years, the data stayed very consistent on average with how many accidents resulted in fatal accidents (.35%), injury accidents (7.3%), property damage & injury accidents (22%), and property damage accidents (70.4%).

CHAPTER 5 | TRANSIT SYSTEMS

Public transit encompasses a variety of modes: commuter rail, intercity and local bus services, van pools, dial-a-bus services and other demand-responsive services, and ferries. The current transit service in and through Orange County are described below.

Commuter rail and bus operations serve the County and connect to parts of northern New Jersey, Rockland County, Westchester County, and New York City. Rail commuters in Orange County are served by Metro-North's Port Jervis and Hudson Lines. The Port Jervis Line, which is operated by NJ TRANSIT under contract with Metro-North, operates from Port Jervis in Orange County to Secaucus Junction and Hoboken in New Jersey, where connections can be made to PATH and ferry services to New York City and to other destinations. Metro-North's Hudson Line can be accessed from Orange County at the Beacon Station by crossing the Hudson River via ferry, bus, automobile, or even by foot over the Newburgh-Beacon Bridge. The Hudson Line provides direct service to Grand Central Terminal.

At the present time, five kinds of intermodal connection facilities exist in Orange County: park-and-ride lots; rail stations with substantial parking; and bus terminals; Stewart airport; and the Newburgh Beacon ferry landing. Park-and-ride lots facilitate transfers between single occupant vehicles; carpools; as well as local, commuter and intercity bus services. Parking is provided at all seven rail stations in the County. The bus terminals offer similar opportunities and also serve taxis and pedestrians. The ferry landing on the Newburgh waterfront and Stewart International Airport are other places where people can connect between various transportation modes.

COMMUTER AND LOCAL BUS SERVICE

Bus transit service in Orange County is provided through regional, local, paratransit and dial-a-bus services. Fixed route bus service is of three main types: a) regional inter-county service including commuter service, b) intra-county transportation, and c) local services in major population centers. The local routes are largely limited to service within commercial and retail areas in the cities of Newburgh and Middletown and the Villages of Monroe and Kiryas Joel.

Coach USA/Shortline (Hudson Transit) is the largest provider of bus service in and through Orange County. Coach USA serves over 1,280,000 Orange County passengers with operating expenses in excess of \$20 million annually. County-wide service is provided for intercity travelers and commuters. Most of the service is provided along the I-84, Route 17, and Route 32/I-87/Route 9W corridors. Coach USA also serves a number of major trip generators including the Galleria at Crystal Run (Middletown), Playtogs Plaza (Middletown), and Woodbury Common Premium Outlet Center. Coach USA provides major commuter service to New York City running nearly a hundred trips per day to and from Orange County during the morning and evening peak hours. Coach USA also provides service to the East Side of Manhattan via the George Washington Bridge and operates the Orange Westchester Link (OWL) which provides service to the White Plains area. Both of these services are provided via five daily weekday round trips.



Coach USA/Shortline Bus in Orange County

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Monroe Bus Corporation: provides commuter and off-peak service to Manhattan and Brooklyn from and to the Village of Kiryas Joel. In 2010, Monroe Bus recorded over 280,000 trips.

Monsey Trails: Connects Kiryas Joel and Monsey in Rockland County with five daily round trips. Ridership on this service has been steadily increasing with an average of 200 riders per day in 2010.

NJ Transit: Provides commuter and off-peak bus service to New York City and northern New Jersey from Warwick and Greenwood Lake. This bus service is provided along Route 210 and Route 17A and serves the Greenwood Lake and Warwick park & rides. In 2010 New Jersey Transit provided over 150,000 trips to and from Orange County.

OTHER REGIONAL TRANSIT SERVICE

Adirondack Trailways

Adirondack Trailways provides bus service in the I-87 NYS Thruway corridor between New York City, Kingston, and Albany, as well as other destinations around New York State.

Ulster County Area Transit (UCAT)

UCAT provides five daily weekday round trips between Newburgh and New Paltz in Ulster County along the NYS Route 32 corridor. This service also has stops on Broadway in Newburgh, the Shortline Bus Terminal on Route 17K and the Newburgh Mall.

Stewart International Airport Transit

Current scheduled transit service to Stewart is very limited. Travelers can make a connection to and from Metro North's Beacon Station across the Hudson River using the Newburgh Beacon bus shuttle. In addition, Coach USA operates one trip daily each way between the airport and the Port Authority Bus Terminal. PANYNJ continues to market the airport to the airline industry, noting that these "rubber tire" connections for service to and from Manhattan can be expanded relatively quickly in step with added air service.

PARK AND RIDE LOTS



Central Valley Park and Ride Lot (Photo Credit: Ashlee Long)

At its most basic, a "park and ride lot" is a place where people can park a car in order to take another transportation trip. Informally that might be any parking lot or even a friend's driveway. In Orange County there are two formal park and ride lot systems which are owned, maintained and promoted as locations to park cars in order to make connections to transit services. One is the system of rail station parking lots owned and maintained by MTA Metro North Railroad, which are described later in the section on passenger rail.

CHAPTER 5 | TRANSIT SYSTEMS

The other is a system of park & ride lots owned and maintained by the cooperative efforts of one or more public and private entities, especially the New York State Department of Transportation, Orange County, and Coach USA/Shortline. The principal connecting transit services at these park and ride lots are for commuter, regional and local bus services. The reality in Orange County is that these park and ride lots might be better called transit hubs, given that most people are parking in order to ride commuter buses. There are eleven lots in this system, ranging in size from large intermodal parking areas with shelters and other amenities to small parking lots with no amenities.

As of 2007 the permit system for county-maintained lots was eliminated and parking in all but the Greenwood Lake lot became free. For various reasons, including the growth in Orange County, growth in transit use, and the transition to free parking, there is a need to complete a park and ride improvement plan. This effort would include updating the inventory and assessment of existing park and rides in the county, analysis of current and future needs for the system, and development of physical, management, and fiscal plans to achieve the recommendations.

LOCAL PUBLIC TRANSIT BUS SERVICES

The Newburgh-Beacon Bus Corporation has operated in the City of Newburgh and its environs since 1934. Service is provided within the City as well as to the Newburgh Mall and Wal-Mart on Route 300, the Shop-Rite on Route 32, the Five Corners area of Vails Gate, and the hospital in Cornwall. The service to Cornwall campus of St. Lukes / Cornwall Hospital and other operational changes were initiated in December 2015 based in large part on transit planning conducted during the Newburgh Transportation and Land Use Study. The changes in short consisted of adding a new north / south Crosstown route, changes to the previous Northside and Southside routes, doubling the number of buses operating the services, and small expansions of the operating day. Under contract with NYSDOT, Newburgh Beacon also operates a commuter-focused route connecting and the Newburgh Transportation Center on NY Route 17K with the Metro-North Railroad Beacon Station. Currently the Newburgh-Beacon Bus Corporation leases eight County-owned buses to help provide these services, which recorded 77,688 passengers in 2010.

The Middletown Transit Corporation has been in service since 1935 and leases four County-owned transit buses which provide service on four different bus routes in and around the City of Middletown. In 2010 Middletown Transit averaged nearly 200 trips per day for an annual total of 49,485 trips. Study and planning for the Middletown area service needs to be undertaken, together with study of the other intra-county services, paratransit service, and the park and ride lot system.

The Village of Kiryas Joel currently leases seven County-owned buses which provide service in the Village as well as destinations in Monroe and Woodbury. In 2010 the Village recorded nearly 62,000 passenger trips.

Town of Warwick Inter-municipal Bus: operates a shuttle between Warwick and Goshen Wednesday through Friday. The Town of Warwick also carried Warwick riders to the Middletown area that connects the medical services on Crystal Run Road, the retail centers at the Galleria and a mini hub at Orange Plaza, where riders can connect with Middletown Transit, the Main Line Service and other service provided by Coach USA.

CoachUSA/Shortline (Hudson Transit) operates “the Main Line” bus service, which harks back to the former Erie Railroad line, which served the villages along NYS Route 17 (this rail bed is now the location of the Heritage Trail). The Main Line buses purchased in 2007 were the first to use new “Transit Orange”

logo. The new Transit Orange logos were developed in late 2006 as a way to unify the diverse transit system of then 16 separate bus operators. The new logos are placed on all County-owned buses and appear in printed materials related to County transit, such as schedules, and will be incorporated in other transit promotion, and on bus stop signs and shelters.

County-sponsored buses traveled a total of 5,528,581 revenue miles and provided 2,219,632 revenue trips in 2010, with a total operating expense well in excess of \$20 million.

DIAL-A-BUS SERVICES

There are presently eight Dial-a-Bus services in Orange County, all municipally-operated, which currently lease 39 County-owned vehicles. Dial-a-Bus services provide demand-responsive transportation services to meet the needs of the general public as well as particular individuals such as the disabled and elderly. While these operations vary in size they provide an essential service for the transit dependent and are open to all potential users.

The Orange County Transit Improvement Study completed in 2001 suggested an eight step approach to the implementation of improved transit in the County; this work is complemented by ongoing planning and special studies such as the intra-county, paratransit, and park & ride system planning mentioned above:

- Establishment of Transit Hubs. Orange County, Coach USA/Shortline and the City of Middletown, are working together to design and reconstruct the Middletown Transportation Center. In addition, the Newburgh Transportation Center on Route 17K is presently being reconstructed as are the Monroe park & ride / transit centers. Additional transit hubs, possibly in Goshen, Woodbury, or other village centers need further investigation.
- Increase Newburgh and Middletown transit service by increasing frequencies and providing special employment-oriented services. In 2007 Middletown added Saturday service and a new route on East Main Street to the Galleria. Orange County now operates the JARC program. Newburgh Area expanded service began in December 2015.
- Consolidate Local Dial-a-Bus Systems - This was one of the primary recommendations of the Transit Improvement Study, which suggested five groupings. Some municipalities have increased operational coordination, including adding routes spanning multiple municipalities however consolidation of operations and management has yet to occur. One dial-a-bus service has stopped due to the level of unfunded deficits.
- Improve ADA Paratransit Service – The County operates this service under a contract arising from a competitive bidding process. Paratransit system reassessment and planning is ongoing.
- Develop a Coordinated Marketing Campaign – The County developed and launched a transit brand in 2007 – ‘Transit Orange’– together with the use of this logo and color scheme for newly-purchased buses. Further marketing planning is underway.
- Coordinate Human Service Agency Transportation – A suggestion in 2001, this is now a federal planning mandate, leading to the development of the first OCTC Coordinated Public Transit Human Service Transportation Plan in 2008. The plan was updated in 2015.

- Streamline County Administration of Public Transportation Services – The County has taken a number of steps to better manage and coordinate transit. County staff have worked to make a number of administrative improvements and have taken advantage of contracting for outside assistance with program management responsibilities and planning. The County works to conduct an annual meeting of all the operators and has considerably stepped up operator oversight.
- Develop a Process for Evaluating Service Requests and Suggestions – The County has a Transit Orange website (www.transitorange.info) and regularly documents service-related complaints. Ongoing planning efforts will involve significant public participation and surveys to assess cost-effective means to meet the service demands by setting priorities and developing service standards.

NYSDOT TRANSPORTATION DEMAND MANAGEMENT (TDM) / TRANSIT

NYSDOT Region 8 has a large TDM program averaging over \$17 million annually (STP, CMAQ, and SDF) to sponsor and collaborate on projects and services for the benefit of the traveling public such as: inter-county bus services, ferries, railroad and ferry feeder services, ridesharing, guaranteed ride home programs, employee trip reduction programs, transit promotion, transit guides, and TDM branding. The Department has worked with the Mid-Hudson Valley TMA on qualifying for more FTA 5307 funds for the TMA and on formulas to allocate those funds. This effort has brought more FTA funding to Dutchess, Orange, and Ulster Counties for their public and private transit operators and reduces the burden of using highway funds to meet transit needs. The Region 8 TDM Unit actively seeks out opportunities to reduce single occupant auto trips and serve the traveling public.

Transit operators both public and private have had adequate funding for normal replacement, state of good repair, and expected service expansions using available FTA funds supplemented by reasonable amounts of CMAQ, STP, SDF transit (and previously federal earmarks). The Region has good relations with our public and private transit operators including Metro-North with whom we partner in many efforts: increasing station parking, operating feeder services to railroad stations, operating two ferry services (Newburgh service from Orange County and Haverstraw service from Rockland), guaranteed ride home programs, Uni-Ticket programs, and transit promotion/information programs. Ferries are currently programmed on the TIP and funded through a MOU (Memorandum of Understanding) between Metro-North and NYSDOT that uses a mix of State and Federal monies to fund the services; The Mid-Hudson Valley TMA has periodically contributed 5307 funds toward this effort.

Region 8's TDM/transit strategy is to continue to actively seek out further TDM opportunities. Region 8 also monitors existing programs to see if they need changes to improve service and performance. Region 8 seeks to provide needed services that counties do not provide such as inter-county express bus and ferry service and operate services for Metro North such as feeder buses to railroad stations which are easier for NYSDOT to operate.

Region 8 also develops park and ride facilities to serve the traveling public and facilitate alternative to traveling alone via ridesharing (carpool/vanpool) and transit use. These facilities are developed through a combination of strategies: Department owned assets and privately owned sites leased either by the Department directly or through transit operators. Most of the Department owned park and ride facilities are operated and maintained under contracts and/or agreements with transit service providers or local municipal/County governments.

PASSENGER RAIL SERVICE

Orange County is served by MTA Metro-North Railroad's Port Jervis Line through a service contract with New Jersey Transit (NJT). This service currently runs from seven stations in Orange County to Hoboken, New Jersey. Prior to 2003, Orange County customers were required to transfer to the Port Authority Trans Hudson (PATH) service in Hoboken for access to Manhattan (or ferry service to lower Manhattan). In late 2003 New Jersey Transit opened the Secaucus Transfer Station, which allows Orange County commuters to access NYC via a transfer in Secaucus to New Jersey Transit service to Penn Station New York. This improvement saves West of Hudson customers traveling to mid-town Manhattan approximately up to 15 to 20 minutes each way. Ferries operated by New York Waterways continue to provide a water connection for commuters from Hoboken to lower Manhattan and the financial district.

Metro-North serves over 84 million customers annually in the New York Metropolitan area, but a relatively small portion are from Orange County due to the configuration of the rail lines and the barrier presented by the Hudson River. Data collected by Metro-North in the Spring of 2014 showed a total of 1,442 riders during the AM peak period on the Port Jervis Line, which represents an increase of 3.6% compared to 2013. The Pascack Valley Line also located on the west side of the Hudson River provides service which is used by some Orange County residents from the station in Spring Valley, in Rockland County.

Metro-North assumed control of the 65 mile Port Jervis Line (PJT) under a long term lease agreement with Norfolk Southern. Metro-North provided significant capital investments including purchase of 65 new Comet V coaches, additional locomotives, significant station rehabilitation, including 945 new and 1,420 rehabilitated parking spaces since 2000 (42% increase), and the start of right of way improvements to track, line structures



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and the signal system. This allowed Metro-North to increase service levels from 106 weekly trains to 158 weekly trains (49% growth).

Metro-North rail service on the east side of the Hudson River is also used by Orange County residents, especially residents of the northeast corner of the County. Metro-North's east of Hudson service terminates at Grand Central Terminal on the east side of Manhattan. This service is more frequent and more direct than the PjL service. Due to its proximity to the Newburgh-Beacon Bridge, the station in Beacon is easily accessible for Orange County residents by car, the fixed-route Newburgh-Beacon bus shuttle, and a connecting ferry between Newburgh and Beacon.

Parking -- MTA Metro North Rail Stations as of 2014

Station	Spaces	Ops/Maint	Utilization
Port Jervis RR Station	110	LAZ Parking	39%
Otisville RR Station	151	LAZ Parking	18%
Middletown RR Station	750	LAZ Parking	29%
Campbell Hall RR Station	231	LAZ Parking	52%
Salisbury Mills-Cornwall RR Station	677	LAZ Parking	64%
Harriman RR Station	985	LAZ Parking	79%
Tuxedo RR Station	219	Village of Tuxedo	<i>unknown</i>
Total	3123		

NEWBURGH BEACON FERRY

Ferry service between Newburgh and Beacon resumed in 2005, forty-two years after it stopped as a result of the opening of the Newburgh Beacon Bridge. In 2015, the ferry service is completing its tenth full year of service and is part of the regional transportation network. It is operated by NY Waterway under contract with Metro-North Railroad (MNR) using agency, state, and federal funds under a Memorandum of Understanding between NYSDOT and MNR. In 2014, the ferry service averaged approximately 250 rides a day (this number reflects a slight drop in ridership vs. earlier years due to the downturn in the economy and shutdowns due to harsh winters). In recent years, FTA 5307 funding has been allocated by the Mid-Hudson Valley MPOs as a component of overall service funding.

There is no intercity Amtrak passenger service in Orange County. That service runs on the east side of the Hudson River between New York City and Albany, and west to Buffalo or north to Montreal. From an intercity perspective, a parallel line providing these services on the west side of the river would be redundant. Neither of the closest Amtrak Stops – Poughkeepsie or Croton-Harmon – is easily accessible to

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Orange County residents. However, Orange County residents can use the Port Jervis Line to connect to the Amtrak station at the joint Amtrak/NJT transit hub at Newark Penn Station (transfer at Secaucus Junction). Both Amtrak's high speed Acela service and the regular Northeast Regional service are available in Newark.

In the 2010-2014 time frame, Metro-North continued right of way infrastructure improvements including the installation of continuous welded rail replacing stick rail, ties and line structures. Bridge and structures work to date has been focused on keeping the structures safe and serviceable. Priority repairs were recently completed on the Moodna Viaduct and may occur into future capital programs.



Newburgh-Beacon Ferry
(Photo Credit: www.nywaterway.com)

Metro-North will continue installation of a new bi-directional cab signal system on the Port Jervis Line with a new signal block design to provide the additional capacity for the intended future operating plan and installation of a Positive Train Control (PTC) system. Cab signal installation is anticipated to be complete in 2018. Metro-North will continue right of way improvements on undergrade bridges and signals and may add new service where possible to accommodate ridership growth.

There are several major studies ongoing that would provide benefits to Orange County residents. They are as follows:

Port Jervis Line (PJL) Capacity Improvements

Metro-North is evaluating options to increase capacity on the PJL. This would be achieved through constructing a new train yard mid-way along the Line to store additional trains and restoring short sections of a second track at select locations to allow trains to pass each other. Capacity restrictions on the line, mostly single-track, with one yard located 95 miles away from Hoboken terminal, limit the extent of service improvements that can be provided to Orange County residents. The proposed PJL improvements would allow Metro-North to provide more frequent peak and off-peak services, and to introduce zonal, express and reverse peak services. The project would also allow Orange County residents to attain the full benefits of any potential future trans-Hudson connection.

West of Hudson Regional Transit Access Study/Rail Access to Stewart (WHRTAS)

This Study is evaluating alternatives for future commuter rail or bus rapid transit service to/from Stewart Airport and the surrounding areas. This service would accommodate the airport's development and regional growth. Metro-North's short-term focus is to protect the right-of way for future project implementation. Phase I of the Study was completed in 2011 and resulted in a short list of four build alternatives for service to the Airport, including a rail extension from PJL's Salisbury Mills Station, a BRT solution from PJL's Salisbury Mills Station, a bus from Beacon Station, and a direct bus from Midtown Manhattan. Metro-North is currently conducting a Phase 2 analysis of these alternatives which will result in the selection of a Preferred Alternative.

PASSENGER RAIL FEASIBILITY STUDY – WALDEN BRANCH LINE

A locally driven planning study examining another potential rail spur from the Port Jervis Line was undertaken by the Village of Walden in 2008, which assessed feasibility of providing passenger service along the Walden branch line from the Port Jervis Line and estimated the cost of upgrading the 9 mile branch freight line from Campbell Hall to its terminus in the Village of Walden. The study determined that it would cost over \$30M to improve the line and operate an independently powered shuttle train car between Walden and the MNR Campbell Hall station; passengers would transfer from the shuttle car to the MNR platform via a pedestrian bridge.

The Village of Walden’s 2005 Comprehensive Plan and the Village of Montgomery 2009 Comprehensive Plan both support the concept of extending passenger rail service in order to enhance transportation opportunities for residents and to stimulate reinvestment. The area around the proposed new station in Walden has been rezoned to Mixed Use and the Village has created a Master Plan for “A New Traditional Neighborhood at Railroad Place” in the vicinity of the proposed train station.

CHAPTER 6 | AIR & FREIGHT SERVICES

Orange County has four airports: Stewart International Airport, Orange County Airport, Randall Airport, and Warwick Airport. The largest by far is Stewart International Airport, which serves both the County and the region, facilitating the movement of both freight and people. The significance of air transportation in Orange County and the relationship to surface transportation and land use will be an increasing subject of interest, primarily due to the future development of Stewart International Airport.

Privatized for a short time under a 99-year lease agreement between New York state and National Express, Stewart provides commercial passenger and freight service. In 2006, the National Express Group announced its intent to sell its lease and since 2007 the airport has been operated by the Port Authority of New York – New Jersey. By virtue of this new relationship, the Port Authority has become a non-voting member of the council.

Stewart International Airport, with its twelve-thousand foot main runway, still partly serves a military purpose, for which it was originally constructed. It is the home of the 105th Airlift Wing of the New York Air National Guard and two Marine Air Squadrons. It is the only airport in the area which operates twenty-four hours and has a control tower. Major renovations at Stewart have increased the passenger service area, constructed a new tower, and have added jet bridges. Passenger service is currently provided by Allegiant, American, Delta, and JetBlue.



Stewart Airport Runway

Access to Stewart International Airport facility is provided along Bruenig Road from NYS Route 207 and an entrance from NYS Route 747 (completed in 2008). Route 747 provides access from Interstate 84 at Exit 5A, and extends from a new intersection with NYS Route 17K to NYS Route 207 on the south. Bruenig Road is a three-lane roadway which originates at the signalized intersection with NYS Route 207 and goes north toward the terminal. NYS Route 207 is a two-lane rural highway running east-west along the southern boundary of the airport. There is currently infrequent bus transit service to and from the airport via the Newburgh-Beacon Shuttle service operated by NYSDOT. Due to the cost of the shuttle service and the very low ridership, the level of service was reduced in 2011. Traffic issues along Route 207, potential capacity improvements, and related traffic and land use issues were studied during the Newburgh Area Transportation and Land Use Study. Regional transit access to the airport has been studied through the West of Hudson Regional Transit Access Study (www.mta.info/mta/planning/whrtas). The previous private airport operator, National Express Group, completed a master plan in 2006. The Port Authority has been reviewing the overall plans for the airport.



Stewart Airbort Terminal

Stewart International Airport continues to grow as a major air cargo facility. The development of land in the surrounding area and the provision of air cargo storage and handling facilities at the Airport are expected to continue this growth. Freight services at the airport are offered by Federal Express, United Parcel Service, and the US Postal Service.

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Current activities at the airport generate approximately 1 million vehicle trips per year. With growth of this facility, the level of trips can be expected to increase grow as well. Projects to improve Route 207 between Bruenig Road and Route 300 are programmed in the TIP; the width of the bridge which carries NYS Thruway traffic over Route 207 is a key constraint for these efforts. This area was the subject of focused analysis and planning as part of the Newburgh Area Transportation and Land Use Study.

Orange County Airport is a medium size airport which has the ability to serve both smaller commercial charter operators and general aviation, including corporate users and flight school users. The facility is one of the state's largest general aviation airports with over 145 based aircraft. Orange County is working to continually make improvements to the airport, including plans to potentially expand aviation activities through privately funded commercial hangars on county leased land. The airport is located just south of the Village of Montgomery on NYS Route 211. Although I-84 passes within one mile of the airport, the nearest interchange is five miles away (Exit 5, Maybrook). Based on its airport master plan forecast of 107,000 ground trips/year to and from the airport at 2005 operation levels, an interchange should not be necessary unless significant other local development warrants it, such as the warehouse and distribution facilities along County Route 99 / Neelytown Road. As a result of the Airport Master Plan Update in 2004 and the Finding of No Significant Impact (FONSI) issued for the Environmental Assessment in 2008, it was determined that there is a need to improve safety by increasing the runway safety area of Runway 3-21 to meet current FAA Requirements. The proposed Runway 3-21 RSA Improvement Project involves the realigning of the existing runway via a clockwise rotation and shifting it approximately 1,000 feet to the northeast. The project will be conducted in 3 phases, Phase I constructed in 2014-2015, Phase II from 2015-2016 and Phase III from 2016-2017 at a cost of approximately \$25,000,000 funded 90% by the FAA, 5% by New York State and 5% through local funds.

Warwick Airport is a small airport serving general private aviation, providing rentals, instruction, and charter services. Only one of its runways is paved. Existing access to Warwick Airport is from (CR 13) King's Highway. Airport plans include more parking areas and, fueling facilities for aircraft, an area for helicopters, and a longer runway to allow utilization by more types of aircraft. Based on the projected levels of aircraft activity in its master plan, the Warwick Airport will probably not generate more than 100,000 annual vehicle trips on the local road system.

Randall Airport is a small airport in the Town of Wallkill. Providing a soaring school as well as tie-down and hangar facilities, the airport is on Airport Road about two miles southeast of Middletown, between I-84 and Schutt Road. The 1995 Randall Airport Master Plan forecasted airport operations to increase to 70,700 by 2014, well within its existing capacity.

FREIGHT SERVICES

Because of its location at the crossing of Interstates 84, 87, and Route 17 (future I-86) which are main routes to and from New York City, New England, Canada and the mid-West, Orange County is an important center and conduit for freight movements. Truck freight serves local businesses and a growing number of distribution and warehousing operations, some of which are also served by rail. A substantial number of trucks are simply passing through. NYSDOT estimates that 21% of the traffic volume on I-84 is truck traffic. Efficient movement of goods in and through Orange County is important to both the regional economy and to New York State and beyond. Over-the-road freight movement is also a significant factor in regard to traffic, congestion, safety, security, road and facility design, and air quality.

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Governor Andrew Cuomo's strategic plan for re-visioning the downstate New York airports calls for the expansion of air cargo operations at Stewart International Airport, which would add to the concentration of multi-modal freight activities in the area. The Port Authority also is investigating the feasibility of creating an air-cargo drop off facility where trucks from the north or west carrying shipments bound for JFK or Newark Liberty airports could avoid traveling into the congested core of the region, with their cargo transferred to a scheduled truck shuttle for the last leg of the journey to JFK and Newark. The drop-off proposal also would highlight SWF's efficient interstate highway connections, underscoring its potential to attract more direct air freight service.

The Port Authority, New York State Department of Transportation, and New Jersey Department of Transportation have recently completed a collaborative long term Regional Goods Movement Action Program. Their objective is a phased-action plan that will support development of a modern freight system for the greater bi-state region. The jointly scoped program incorporates strategies to address projected regional goods movement needs and related economic opportunities with strategies for more efficient, sustainable, and safer goods movement by road, rail, and water.

Over-the-Road Trucking

The majority of freight delivered to and shipped from the County is carried by truck. There are numerous motor carrier terminals serving for-hire carriers and specific industries located in Orange County. According to NYS Department of Labor there were 42 Local General Freight Trucking companies operating in Orange County in 2002, and 12 long distance freight companies identified. Other companies with significant levels of freight activity were also identified by local officials. The largest of these companies are concentrated near I-84 in the Towns of Montgomery and Newburgh. The majority of shipments passing through these facilities have origins and destinations outside Orange County, via travel on the interstate system. NYSDOT Region 8 reports that there are approximately 10,000 trucks a day traveling on I-84 east near East Fishkill in Dutchess County and estimates that a similar number are traveling daily on I-84 with in Orange County. The major freight, distribution, and warehousing operations are clustered near I-84 Exit 5 in Montgomery, near I-84 and I-87 near Stewart International Airport in the Towns of Newburgh and New Windsor, and near NY Route 17 (future I-86) in the Town of Chester.



I-84, Orange County

Rail Freight Operations

The rail freight operators in the County are CSX, Norfolk Southern, New York Susquehanna and Western (NYS&W), and Middletown & New Jersey (MNJ). CSX and Norfolk Southern are the only Class I operators within the County, operating over 100 miles of track. The largest carrier is CSX which operates approximately 52 trains per day on the west shore River Line along the Hudson River. This line passes the length of the county (22 miles) extending north and south into Ulster and Rockland Counties. CSX also operates a six mile short line known as the Newburgh Industrial Track, extending from the Newburgh waterfront to Cornwall with one train per day.

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Norfolk Southern (NFS) operates from Port Jervis to Tuxedo on the same track owned by MTA Metro North used for the Port Jervis Line passenger service. Norfolk Southern operates approximately 2 to 4 freight trains each day. NFS also operates three short lines. One of these, the Hudson Secondary, extends twenty miles from the Town of Montgomery to the Town of Warwick with approximately two trains operating per day. Two additional short lines run from Hamptonburgh to Montgomery and Walden. These lines are known as the Maybrook Industrial Track (7 miles in length) and the Walden Secondary (6 miles in length). Approximately one train operates on each of these lines per week. NFS also operates a one mile section of track within the Town of Warwick. One train runs on this track per week, which is known as the Belvidere Industrial Track.

There are two other short line railroads operated by NYS&W and M&NJ. NYS&W has trackage rights over the Norfolk Southern Tier Line and also owns about 4 miles of track between Warwick and the New Jersey state line. M&NJ operates over 19 miles of track. The operating costs of the rail system are the responsibility of the private carriers. The State currently contributes toward improving rail clearances on the existing systems that will eventually allow inter-modal and double-stack services and thereby expand market share. Double-stack cars are currently being used by CSX on the River Line.

Marine Freight

There is little marine freight activity on the Hudson River trans-loaded within Orange County. The port of Newburgh is served by rail service that is currently operated by CSX. Highway access is limited to local streets. The Hudson River Waterfront in Newburgh has access to multiple transportation systems and resources. Industrial access to the Hudson River waterfront can be supplied by barge via the Hudson River, by rail or by highway via interstates 84 and 87, however, trucks must use local roads to reach the highway access points. Power plants and oil terminals have capitalized on the infrastructure in Newburgh.

Freight Service Needs

Present and future freight trends for Orange County are not as well understood as they should be, and anecdotal evidence indicates the same is true elsewhere in the region. Because of its proximity to major interstate, rail, air, river and even trans-national transportation routes, the amount of freight originating within or traveling through the county is anticipated to grow. What the nature and quantity of that growth will be by sector, what goods are being transported in, out and through Orange County, and what the related impacts will be on capacity and environmental quality are questions that need to be answered. The quality of freight service in and through the County in the future will depend on the condition and capacity of the highway network, the rail network, the facilities at Stewart Airport, as well as the development of the Port of Newburgh. The efficiency of interconnections between these facilities will also be critical. To address these issues, OCTC needs to devote planning resources to conduct a detailed freight study. This study must:

- inventory the present regional freight system for all modes and determine the general types and volumes of through-freight shipments and freight shipments to and from businesses in the County
- evaluate the adequacy of the existing transportation system, together with already programmed improvements, to meet multimodal freight needs in the future and assess the need for additional facilities such as intermodal terminals
- determine the economic benefits of improvements recommended

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- provide a set of actions that can be taken by public agencies in the region to address the needs identified.

Specific aspects to be examined include:

- Traffic congestion
- Air quality and practical methods for reducing freight related emissions
- Potential for increased use of rail service (and related competition with passenger service)
- Truck restrictions on Routes 284, 94, & 17A (due to restrictions on Rt 209 in Pennsylvania).
- Collection of data on the volume and characteristics of freight movements in the County including tons moved, average trip length and trip length distribution, and through freight volumes compared to freight with an origin and/or destination in Orange County.
- Access to Stewart International Airport and the Stewart Industrial Park; access to other distribution and warehousing centers
- Impact of restricted turning radii and islands on truck movements
- Need for more freight forwarders at Stewart and additional carriers serving New York and New Jersey airports
- Pavement conditions
- Tolls and tolling collection systems
- Assessment of marine freight operations, opportunities, and land-side connections
- Development of methods and operating procedures to improve local truck service in villages without creating on-street congestion
- Access to local shipping terminals and industrial parks from the NYS Thruway (I-87), Route 17 (future I-86) and I-84 that would minimize local road impacts
- Need for and potential location of intermodal terminals
- Truck impact on local streets such as Union Avenue
- Condition of and responsibility for repair of structures separating rail lines and highways

Completion of this freight study will provide guidance to County and State officials responsible for the prioritization and funding of transportation projects as they plan for the future of the County. OCTC and other MPOs in the region have been coordinating with NYSDOT which is preparing a Statewide Freight Plan. It is hoped that this statewide plan will help guide planning efforts here. More on that effort can be found here: www.dot.ny.gov/freight-plan.

CHAPTER 7 | NON-MOTORIZED TRANSPORTATION

Non-motorized transportation options in Orange County include, walking, biking, hiking, horseback riding, and blueways. These options are an important part of Orange County's infrastructure and allow people to enjoy the county's outdoor attributes. These non-motorized options have been evolving over time and people are able to enjoy at least one form of non-motorized transportation in every part of the county, helping to emphasize physical activity and overall healthier lifestyles for both residents and visitors alike.

VISION, GOALS, AND OBJECTIVES

Orange County's vision for non-motorized transportation states that: "Orange County will be a place where all forms of non-motorized transportation will be available and safe for both transportation and recreation". This vision will help to guide the County in the shaping of future non-motorized transportation studies, recommendations, policies, and implementation.

The non-motorized transportation goals and objectives are based on the 1998 Bicycle and Pedestrian Plan and were updated in 2012 with the creation of the Framework Document that looked at non-motorized transportation in the Newburgh area. Most recently, they were updated with the public input from the Trails Forum that took place in March 2015.

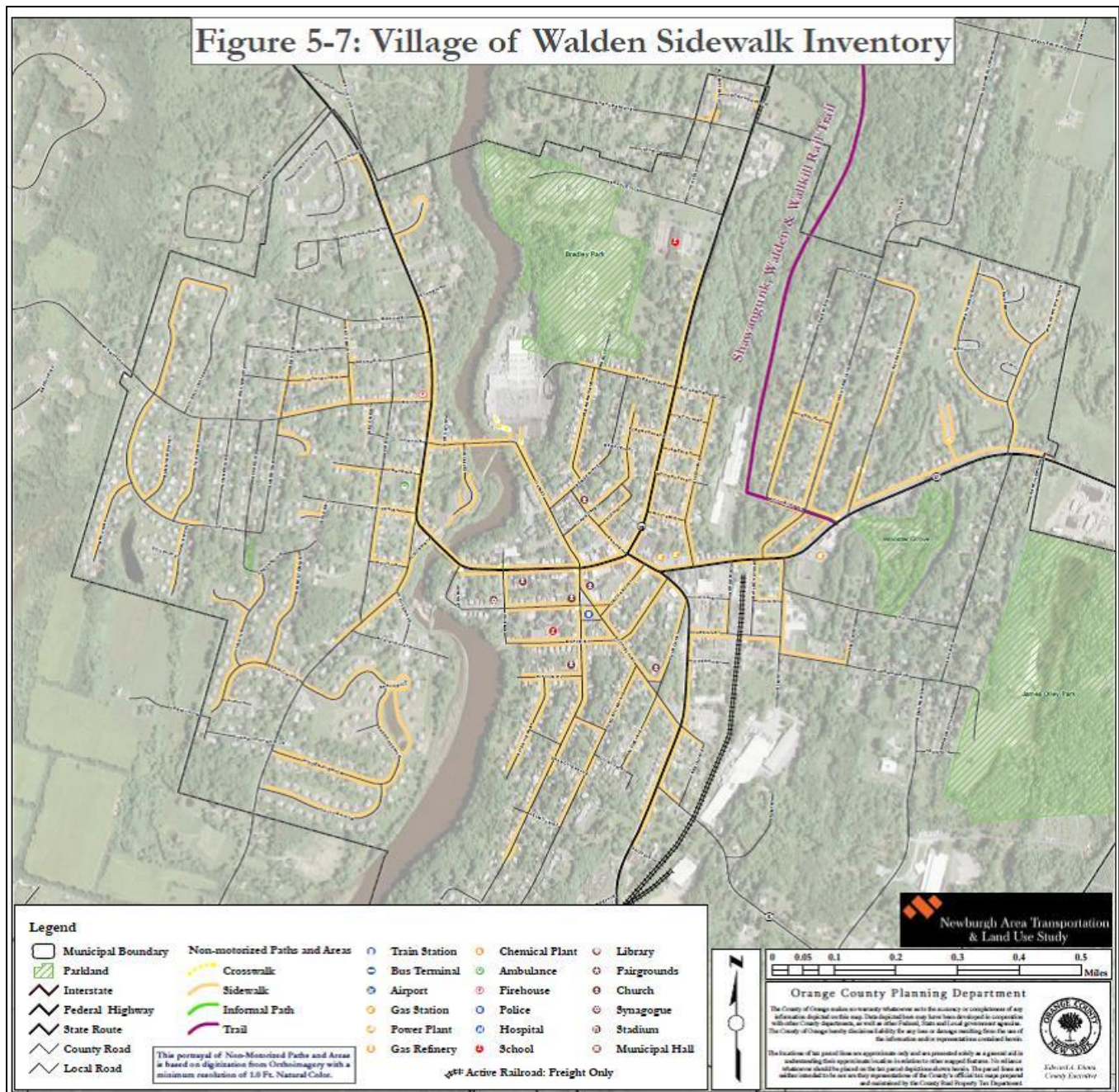
See Chapter 13 for Non-Motorized Transportation Goals and Objectives.

EXISTING CONDITIONS

Pedestrian Infrastructure

Sidewalks in Orange County are limited principally to the more urban and densely settled areas. During the Newburgh Area Study in 2012, a basic sidewalk inventory was performed on several municipalities including the City of Newburgh, Village of Cornwall-on-Hudson, Village of Maybrook, Village of Montgomery, and Village of Walden. A basic sidewalk inventory has also been completed for the Village of Goshen. These inventories utilized aerial photography with partial verification in the field. This data can be used to identify where proper pedestrian treatments exist and where there are gaps, as well as the ability to walk to key destinations within a municipality. Completing sidewalk inventories for the remaining municipalities in the County would be a useful tool in identifying gaps in sidewalk coverage and prioritizing the areas that would benefit the most from sidewalk investment.

Sidewalks offer a mode of transportation to segments of the population who are less likely to own a vehicle and rely on walking or public transit as their primary mode of transportation. People are less likely to complete a trip by foot if that trip is not safe or convenient. This is especially true for individuals who have mobility or vision impairments. To best address the issues of safety and convenience, the sidewalk network must be continuous and comply with the American with Disabilities Act.



On roadways without sidewalks, pedestrians have the option to walk on the shoulder; however, many roadways are not wide enough to accommodate both motor vehicles and pedestrians safely. High traffic volumes and speeds, lack of dedicated bicycle lanes and facilities, and poor maintenance of shoulders and roadways all contribute to an unsafe environment. According to the Institute for Traffic Safety Management and Research, in 2013 there were 2 pedestrians killed and 162 pedestrian/motor vehicle crashes in Orange County (see table on next page).

CHAPTER 7 | NON-MOTORIZED TRANSPORTATION

Orange County Crash Summary Table: Prepared by the Institute for Traffic Safety Management and Research

Category Totals	2011			2012			2013		
	County Total	NYS Total	% of NYS	County Total	NYS Total	% of NYS	County Total	NYS Total	% of NYS
Total Crashes	9,898	307,550	3.2	9,084	294,757	3.1	9,796	304,804	3.2
Fatal Crashes	32	1,077	3.0	36	1,082	3.3	32	1,109	2.9
Non-Fatal Personal Injury Crashes	2,857	128,036	2.2	2,686	123,296	2.2	2,876	124,505	2.3
Reportable Property Damage Crashes	7,009	178,437	3.9	6,362	170,379	3.7	6,888	179,190	3.8
Manner of Collision									
Single Vehicle Crashes	4,295	98,836	4.3	3,859	97,456	4.0	4,189	101,607	4.1
Multiple Vehicle Crashes	5,603	208,714	2.7	5,225	197,301	2.6	5,607	203,197	2.8
Special Crash Series									
Pedestrian/Motor Vehicle Crashes	176	15,928	1.1	113	15,832	0.7	162	16,432	1.0
Bicycle/Motor Vehicle Crashes	49	6,076	0.8	49	6,137	0.8	54	6,328	0.9
Motorcycle Crashes	174	5,336	3.3	207	5,916	3.5	192	5,190	3.7
Fatalities									
Persons Killed (1)	35	1,153	3.0	39	1,163	3.4	35	1,188	2.9
Drivers Killed	23	597	3.9	26	612	4.2	27	625	4.3
Passengers Killed	6	203	3.0	10	194	5.2	5	178	2.8
Pedestrians Killed	5	296	1.7	3	312	1.0	2	344	0.6
Bicyclists Killed	1	57	1.8	0	45	0.0	1	40	2.5
Other	0	0	0.0	0	0	0.0	0	1	0.0
Non-Fatal Injuries									
Persons Injured (1)	3,912	177,445	2.2	3,629	169,206	2.1	3,896	169,177	2.3
Drivers Injured	2,647	106,335	2.5	2,528	101,605	2.5	2,606	101,317	2.6
Passengers Injured	1,038	48,677	2.1	935	45,532	2.1	1,069	45,003	2.4
Pedestrians Injured	169	15,689	1.1	111	15,607	0.7	161	16,278	1.0
Bicyclists Injured	47	5,883	0.8	49	5,929	0.8	52	6,140	0.8
Other	11	861	1.3	6	533	1.1	8	439	1.8

(1) Includes pedestrians, bicyclists and all other non-vehicle involved persons as well as vehicle occupants regardless of seating position.

General Notes

- * Some of the tables are based upon information received from police and motorist reports of motor vehicle crashes. Others are based only on the police reports; these are indicated by a (P).
- * The Property Damage Crash reporting level is \$1,000 or more.
- * The term "vehicle" always excludes bicycles.
- * The term "driver" always excludes bicyclists.
- * Percentages may not total 100.0 due to rounding.

Bicycle Infrastructure

Due to the limited facilities, sharing highway space with motorists is the only option for bicyclists in most parts of the County. According to motor vehicle and traffic law, all roads are open and available to cyclists and pedestrians except for the expressway system, totaling 97.1 miles in the County, where they are prohibited. The exception to this expressway ban is the Newburgh Beacon Bridge which has bicycle and pedestrian facilities linking the City of Newburgh with the City of Beacon across the Hudson River. While cyclists by law are allowed to use public roadways, realistically, highways with no special provision for cyclists or pedestrians are less safe. OCTC non-motorized transportation planning is intended in part to help garner agency and municipal commitments to widening and marking shoulders for bicyclists.

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Currently, State Routes 6, 9W, 17A, 17K, 17M, 32, 42, 52, 94, 97, 207, 208, 209, and 302 are all designated as bicycle routes, though only State Bicycle Routes 17, 208, and a portion of 209 have formal signage. None have any pavement demarcations or design treatments such as separated bikeways, on-street bike lanes, or shared bike/vehicle pavement markings to facilitate bicycle usage. While portions of these roads can safely accommodate bicyclists, many are not appropriate for cycling in their current configuration. In addition to roadways, some trails, such as the Heritage Trail and the Walden-Walkkill Rail Trail, allow bicyclists.

The recent Newburgh Area transit service introduced hybrid buses in 2013 with bike racks. Generally though there are still limited carrying options for bikes on trips that combine bicycling and bus or train travel, as well as a lack of bicycle racks and other storage options around the County. The Port Jervis Line, operated by NJ Transit for MTA Metro-North, does allow bicycles to be brought on board during non-peak weekday periods and on weekends, and folding bicycles are permitted at any time.



*Signage for Bicycle Route 208
(Photo Credit: Ashlee Long)*

Trails Infrastructure

The county trails system ranges from paved intra-city walking trails to more rugged trails suitable for hiking, mountain biking, and equestrian riding. Intra-city trails offer pedestrians a safe place to walk out of motor vehicle traffic, as these trails are comprised of city sidewalks. There is some potential for commuter traffic on these trails, although they were originally designed for recreation and tourism. People have the opportunity to take self-guided tours and view attractions such as numerous cemeteries, parks, and George Washington's headquarters in the City of Newburgh. Intra-city trails enable people to measure the distance they walk and are suitable for daily exercise, such as the Healthy Orange Loop Trail in the City of Port Jervis which consists of a 2.25 mile loop through the City. The Healthy Orange Trail system is an initiative set up by the Orange County Health Department to give all users access to healthy lifestyle choices.

The hiking trails found in the County include such trails as the Long Path, Schunemunk Mountain trails, Storm King State Park trails, Black Rock Forest trails, and 88.4 miles of the



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Appalachian Trail. Some trails allow equestrian riding and dogs, both leashed and unleashed. There are many trail advocacy groups including the NY-NJ Trail Conference who partner with parks and utilize volunteers to maintain numerous trails located in Orange County. Other trail advocacy groups have been instrumental in progressing trails in the County, particularly the Orange County Citizens Foundation Pathways Committee which was created in 1990 to promote and develop multi-recreational trails and was an advocate for the Heritage Trail from the beginning. They were instrumental in the construction of the first sections of the Heritage Trail through their financial donations and community involvement. The first sections of the Heritage Trail run from the Village of Monroe to the Village of Goshen and hosts approximately 150,000 users per year. Phase 2 of the Heritage Trail, which will begin in Goshen and end in the City of Middletown, has been supported by the Middletown Heritage Trail Advocates. This 10 mile trail extension is programmed for federal funding matched by Orange County.



Clockwise from Left: Heritage Trail in the fall, Proposed Heritage Trail Map, Walden-Wallkill Rail Trail Sign, D&H Canal Trail in the winter

Regional Trail Connectivity

The Hudson Valley's close proximity to New York City makes it a destination accessible to a significantly large population. As an international destination, tourists are also able access the Hudson Valley. By strengthening the regional trail connections between neighboring counties, the Hudson Valleys' allure will only become greater and benefit Hudson Valley counties and communities through improved transportation options, opportunities for economic development, improvements in public health, reduced harm to the environment, and increased equity. Currently, designated NYS Bike Route 207 crosses over the Newburgh-Beacon Bridge into Dutchess County and becomes NYS Bike Route 9D, NYS Bike Routes 9W, 32, and 208 all cross into Ulster County, the Walden-Wallkill Valley Rail Trail extends between Orange County and Ulster County, the Shawangunk Trail runs between Orange, Sullivan, and Ulster County's, the Long Path

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currently connects Fort Lee, NJ to Altamont, NY, via Rockland, Orange, Sullivan, and Ulster County's, the Highlands Trail traverses between Orange County and New Jersey, and the well-known Appalachian Trail runs through Orange, Rockland, Westchester, Putnam, and Dutchess County's.

Equestrian Infrastructure

Orange County has approximately 440 horse farms, stables, riding schools, and breeders, and has one of the largest populations of horses in New York State. There are five parks with trails, in addition to the privately owned trails, that allow horses: Goosepond Mountain State Park, Highland Lakes State Park, Stewart State Forest, Thomas Bull Memorial Park, and Winding Hills Park. Goosepond is a very wooded and undeveloped park with many off-the-path trails and quiet places for stopping; Highland Lakes is an undeveloped park of over 3,000 acres of woods and lakes; Stewart Forest is 6,770 acres of wetlands, fields, forests, ponds and lakes, and trails; Thomas Bull offers many horse stables and riding areas; and Winding Hills is filled with camp sites, lakes, wooded trails, and many other amenities. These places provide ample opportunities for taking riding lessons, participating in camps, going for trail rides, and participating in horse culture and recreation.



Blackburne Farm, Future Equine Park Site

Equestrian advocates have long been asking to see more trails available for horses and to be included in conversations that may take place regarding the future development of trails in the County. With such a large population of horses, the County would benefit from adding more equestrian trails and amenities that would bring both economic and social benefits.

Waterways

Orange County claims numerous lakes, streams, and rivers. Some of these waterways are recreationally navigable and have facilities available for kayaking, canoeing, and both motorized and non-motorized boating, but many are not accessible or navigable. Along the Hudson River there are a limited number of boat launches open to the public, including one in the Town of Newburgh and the Town of New Windsor which are operated by the New York State Department of Environmental Conservation (NYSDEC). The NYSDEC also operates 9 other boat launches around the County. The Route 17, Exit 122 Interchange Reconstruction includes a canoe and kayak launching facility.



Town of Montgomery, Benedict Park Boat Launch

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CURRENT PLANS AND INITIATIVES AND PUBLIC OUTREACH

The current Orange County Bicycle and Pedestrian Plan was approved in 1998 as an outgrowth of the Long Range Transportation Plan Update in order to identify existing facilities and recommend future actions to promote bicycle and pedestrian facilities as viable travel alternatives. A framework document that looked mostly at non-motorized transportation in the Newburgh area, as well as partially county-wide, was completed in 2012 and acts as a partial update to the 1998 plan. This framework document was created through the Newburgh Area Transportation and Land Use Study, which identified key priorities for creating integrated solutions for transportation and land use.

This effort included a public workshop in October 2010 held in the Village of Montgomery to gather input from stakeholders and the general public; it was attended by approximately 45 individuals. The workshop consisted of a presentation overview of the project followed by a breakout session where attendees circulated the room to all workshop stations that were of interest. The input received during the workshop and from the questionnaires were then compiled and synthesized.

In March 2015 a Trails Forum was conducted in Deerpark put on by the Orange County Citizens Foundation and co-sponsored by the Orange County Planning Department. This forum offered the public a chance to comment on the non-motorized transportation system in the County. Following opening presentations, small group sessions discussed and reviewed maps that depict the trails, bike routes, parks, waterways, and proposed trails in Orange County. Each group leader was asked to facilitate the group discussion and take notes on participant feedback. There were community members there representing a myriad of users including bicyclists, pedestrians, equestrians, and advocacy groups.

Complete Streets

Complete Streets create multi-modal transportation networks that have been designed for all users, regardless of age and abilities. These users include pedestrians, bicyclists, motorists, and transit vehicles. Complete Streets comes in different forms and can vary from town to town depending on the different needs and wants expressed. Some elements of a Complete Street could include sidewalks, bike lanes, curb extensions, and median islands. These elements of a streetscape are especially important for older adults, children, adolescents, and those living in low income communities as these people are less likely to own a car or drive. Healthy street environments lead to healthy people, communities, and economies. The revitalization of a community's sidewalks, bike lanes, and road systems revitalizes the community itself.



*Example of Complete Street in NYC
(Photo Credit: www.dirt.asla.org)*

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In 2011, New York State passed the Complete Streets Act which requires state, county, and local agencies to consider the convenience and mobility of all users when developing transportation projects that receive state and federal funding. As of 2014, a total of 712 jurisdictions had Complete Streets policies in place nationwide, with approximately 80 municipalities and 8 counties in New York State enacting Complete Streets policies. On April 13, 2015, the City of Port Jervis became the first Orange County municipality to pass a Complete Streets resolution. This resolution highlights the benefits of Complete Streets which include economic, health, safety, social, and environmental benefits and commits the City to formulating a future plan as soon as time and funding may be available. Currently, the City of Newburgh is working to integrate Complete Streets into the Lower Broadway section of their main thoroughfare and may adopt a Complete Streets resolution in the future. In conjunction with the Orange County Health Department, the Planning Department has been working to educate other Orange County municipalities about Complete Streets with an objective that they will pass Complete Streets resolutions. This process includes meetings with municipality officials, a walking tour of the city, town, or village that highlights how Complete Streets would be beneficial, and a presentation to the council if desired.

In June of 2015, a grant was awarded to Orange County from the NYS Department of Health to implement the Healthy Orange Schools and Communities (HOSC) Program. This is a joint initiative between the Health and Planning Departments. The HOSC program was designed to implement sustainable policy and system and environmental changes in the targeted high-need school districts of Newburgh Enlarged City School District and the Port Jervis City School District, and the communities where the students and their families live. The project will be funded at an annual amount of \$250,000 for five years. Both the Health and Planning Departments will utilize the funding to hire two full-time Coordinators. The School Health Coordinator (SHC) will be based in the Health Department and will be responsible for collaborating with the selected high need school districts. The SHC's focus will be to guide the school districts in the implementation of policies, systems and environmental changes regarding nutrition and physical activity standards and increase students' access to healthy food. The Planning Department will be hiring a planner to fill the position of Community Health Coordinator (CHC). The CHC will be responsible for collaborating with the local municipalities, small store owners, healthcare agencies and other community organizations in the communities surrounding the targeted school districts, as well as, mobilizing communities to increase access to healthy foods and opportunities for physical activities.

This joint departmental collaboration will also work with the Cornell Cooperative Extension of Orange County (CCEOC) as a not-for-profit link to both schools and communities to meet program deliverables.



Above: Paved Shoulder of Complete Street (Photo Credit: Dan Burden)



Below: Example of a Complete Street in the City of Syracuse (Photo Credit: Ashlee Long)

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Orange-Ulster Board of Cooperative Educational Services (BOCES) will also lend their expertise to provide culinary training to food service personnel in each district. The proposed multi-sector approach aims to share strategies and the best practices to implement policy, systems and environmental change for the targeted high-need school districts and their surrounding communities.









Design Guidelines: Best Practices and Resources

As the Planning Department continues to move forward in its efforts to have all municipalities in Orange County adopt Complete Streets resolutions, there will be a need for design and implementation guidelines and best practices. Major cities such as Boston, Chicago, Philadelphia and New York City have all developed street design manuals, but more rural jurisdictions such as Ulster County, New York have also been developing design guidelines for bicycle and pedestrian facilities on suburban and rural roads. These manuals set out their street design policy and provide guidance on how complete streets should look within their jurisdictions. These design manuals provide schematics of pedestrian and bicycle facilities and design treatments, and stipulate where and how each design should be implemented.

Local and regional plans are guided by national and state design manuals that provide engineering guidelines for the development of bicycle and pedestrian facilities. The American Association of State and Highway Transportation Officials' (AASHTO) Guide for the Development of Bicycle Facilities (1999) and the Federal Highway Administration's Manual on Uniform Traffic Control Devices are two major national resources used in bicycle, pedestrian, and multi-user facility design. The National Association of City Transportation Officials (NACTO) has also developed a Bikeway Design Guide to provide cities with state-of-the-practice design solutions that are not directly referenced in the AASHTO and MUTCD manuals. Also, the Pedestrian and Bicycle Information Center (PBIC), which is funded by the Federal Highway Administration, is a national clearinghouse of information relating to pedestrian and bicycle planning. Within New York State, the Department of Transportation's (NYSDOT) Highway Design Manual provides design guidance for bicycle facilities on State roads. Recently, chapters 17 and 18 of that manual were updated to include a Capital Projects Complete Streets Checklist. The checklist went into effect on September 1, 2015 for scoping and design of all projects other than basic pavement maintenance.

The table on the next page provides a menu of major bicycle facility design treatments currently being used in the United States that are recommended for use in Orange County. The table provides examples of pedestrian treatments recommended for Orange County that go beyond the basic building blocks of sidewalks and crosswalks to improve safety and mobility. These bicycle and pedestrian recommendations have been compiled based on the resources mentioned above and from other municipal design manuals such as the New York City Street Design Manual (New York City Department of Transportation, 2009).

STANDARD BICYCLE TREATMENTS

CATEGORY	CLASS 1: SEPARATED BIKEWAY		CLASS 2: BIKE LANE				CLASS 3: BIKE ROUTE	
	Multi-use Trail Shared-Use Path	Protected Bikeway	Buffered Lane	Standard Lane	Bike/Parking Lane	Shoulder Lane	Shared Lane	Signed Route
								
Description	Multi-use facility physically separated from traffic; no/limited traffic interaction	Physically-separated bike facility along roadway traffic; limited traffic interaction	On-street bike lane separated from traffic by striped buffer	On-street bike lane striped along curb or parking lane	Shared curbside bike and parking lane	Painted shoulder that is maintained to accommodate bikes; could feature bike lane marking	Marked bike route that operates in mixed traffic	Signed as a bike route; bikes operate in mixed traffic
Typical Width	10 to 14 Feet	8 to 14 Feet	8 Feet	5 Feet	12 Feet	At Least 5 Feet	N/A	N/A
Ideal Application	County and regional trails; bike routes along roads with excess width or unused adjacent right-of-way	Roads with excess width; roads with high volumes and speed limits	Roads with excess width; roads with high volumes and speed limits	Residential and commercial streets with moderate volumes	Commercial streets with moderate volumes; roads with excess width and existing on-street parking lane	Suburban and rural streets with moderate volumes	Neighborhood streets and other low-volume roadways	Neighborhood streets and other low-volume roadways

Bicycle Treatments recommended for use in Orange County

Photo Credits: www.pedbikeimages.org

EXAMPLE PEDESTRIAN SAFETY AND MOBILITY IMPROVEMENTS

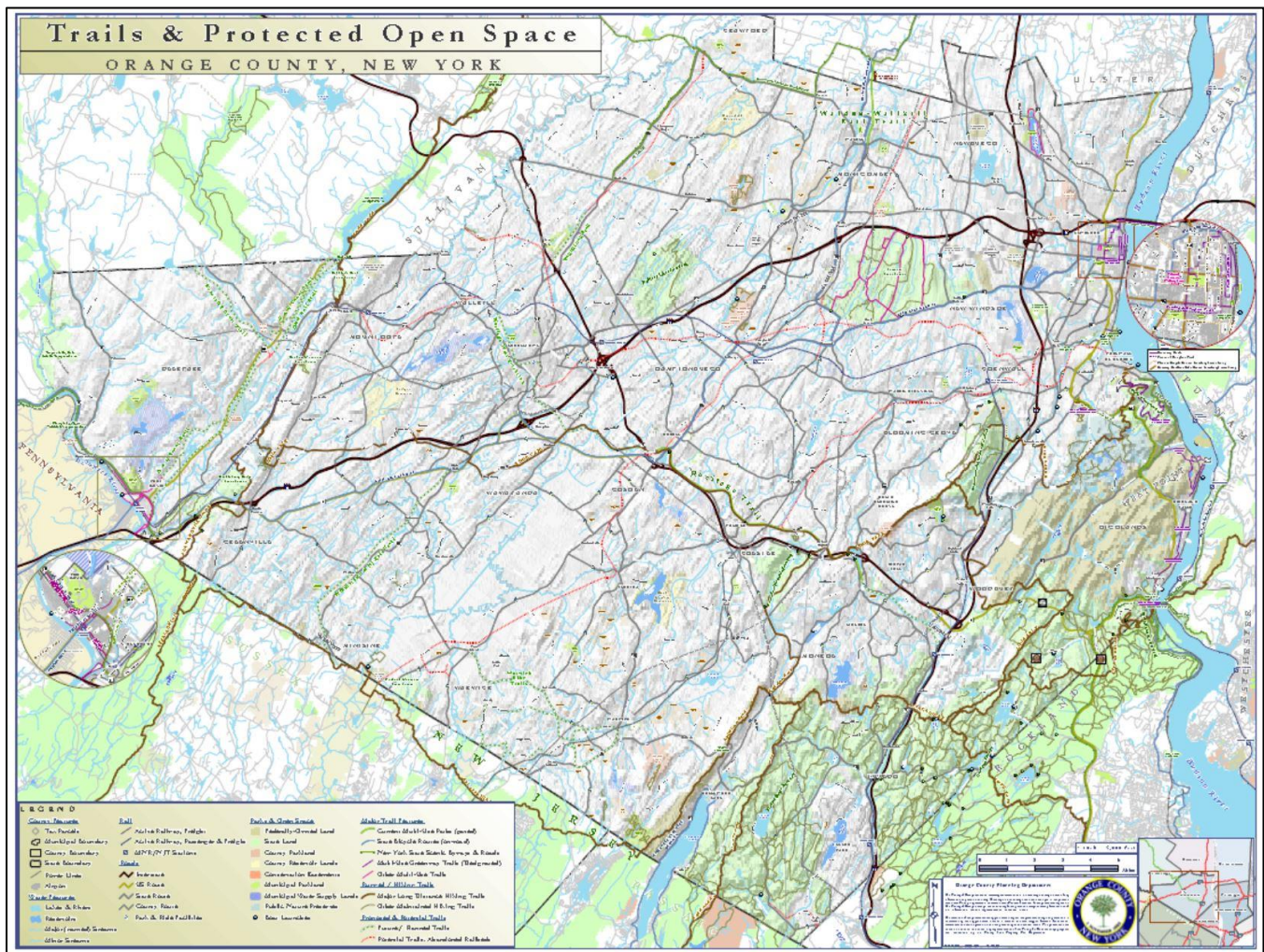
	SIDEWALKS			CROSSINGS				
	Curb Extension	Curb Ramps	Street Furniture and Planters	Center Median Refuge	High Visibility Crosswalks	Signage	Mid-block Crosswalk	Countdown Pedestrian Signal
CATEGORY								
Primary Purpose	Shorten crossing distance and reduce pedestrian exposure	Provide accessible street crossings	Enhance pedestrian environment and attract users	Provides refuge between traffic lanes for pedestrians crossing the street	Increase visibility of crosswalks to motorists	Increase awareness of pedestrians and compliance of traffic rules	Improve pedestrian connectivity by providing crossings between intersections	Indicate appropriate time needed for pedestrian crossing
Ideal Application	Streets with parking lanes	Anywhere there is a crosswalk	Commercial districts / village centers	Wide streets with long crossing distances	High volume / high speed roadways	Popular pedestrian crossing locations (often used in Safe Routes to School projects)	Long blocks, Near pedestrian attractions	Wide intersections, Pedestrian-heavy locations

Pedestrian Treatments recommended for use in Orange County

Photo Credits: www.pedbikeimages.org

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Other County efforts that complement the national design guidelines for Complete Streets include the Orange County Design Manual, the Orange County Comprehensive Plan, the Orange County Open Space Plan, and the current Orange County Trails map.



Map available on OCTC website.

Orange County Design Manual

This manual describes the underlying framework and design aspects of “smart growth” for the County, as well as the implementation tools and strategies to bring it about. The document is organized around the three smart growth themes of Green Infrastructure, Connectivity and Complete Communities. It is based upon the work of two concurrent planning initiatives commissioned by the Orange County Planning Department summarized in the reports *Illustrating Smart Growth for Southeast Orange County* and *Managing Growth in Central Orange County New York*. The connectivity section provides design recommendations for street and trailway layouts which are complemented by the recommendations set out in this document.

Orange County Comprehensive Plan

This plan provides guidance on land use, development and preservation within the County. It also provides direction on financial, technical and infrastructure resources available to county and local officials. Additionally, it defines major trends, assets and challenges, and is updated by the County every five years.

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Orange County Open Space Plan

This plan is a supplement to the Comprehensive Plan and has been developed to define the environmental characteristics of the county, future open space needs, and to recommend actions needed to protect open spaces. Two primary areas of concern are addressed: management of development patterns, and the future of agriculture. In this plan several resource areas are considered, including recreation.

Orange County Existing and Proposed Trails Map

This map is available through the Orange County Transportation Council and the Orange County Planning Department. This map is updated as new information becomes available.

FUNDING

In 2012, President Obama signed into law the Moving Ahead for Progress in the 21st Century Act (MAP-21). MAP-21 authorized the Transportation Alternatives Program (TAP) which has replaced previous programs that included the Transportation Enhancement Program (TEP), the Recreational Trails Program, and the Safe Routes to School Program. These programs were previously separately funded in preceding federal surface transportation acts. The national total reserved for TAP is equal to 2 percent of the total amount authorized from the Highway Account of the Highway Trust Fund for Federal-aid highways each fiscal year.

Under MAP-21, specific funding for SRTS was not designated, but SRTS projects are eligible for TAP and Surface Transportation Program (STP) funds. The program enables communities to make walking and bicycling to school a safe and routine activity. Projects that could be considered under the SRTS umbrella include crosswalks, striping, signage and sidewalk improvements, educating students and municipalities about the long-term benefits and cost savings, installing appropriate lighting and traffic signals, and training volunteers as crossing guards, safe houses, and “walking school bus” leaders. Children, their families, and their communities will benefit from reduced congestion, air pollution and transportation costs, increased physical activity, and a safer environment for students.

The TAP projects are selected through a competitive solicitation process and rated on established criteria that include environmental enhancement to and for the transportation system; connectivity to an existing transportation system; encouragement of smart growth; impact on local or regional economies; availability of matching funds; and level of community support. Up to 80 percent of the proposed project costs will be provided to successful applicants. Project sponsors are responsible for securing the remaining project funding.

Projects that are eligible for TAP funding include:

- On-road and off-road trail facilities for pedestrians, bicyclists and other non-motorized forms of transportation;
- Infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities, to access daily needs;
- Community improvement activities, including improving roadway safety in transportation rights-of-way and erosion control; and
- Environmental mitigation activity, including pollution prevention and abatement activities and highway storm water drainage control to prevent flooding.

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NYSDOT REGION 8 BICYCLE AND PEDESTRIAN STRATEGY

The Region's strategy is to:

- Complete the Region's network of trailways
- Improve Bike Routes 9 and 17
- Continue Regional policy for reconstruction projects of minimum 4 foot shoulders and 6 foot shoulders on bridges
- Designate and sign bike routes as routes are improved
- Improve existing sidewalks along state highways to insure ADA compliance
- Address bicycle and pedestrian needs in all projects as appropriate
- Identify and construct needed sidewalk projects
- Support local governments with federally aided local projects to complete trailways and sidewalks

NYSDOT will support Hudson Valley Greenway and Quality Communities efforts. NYSDOT also publishes a popular guide to bicycle and pedestrian facilities, *Hudson Valley Bikeways & Trailways*.

The Region envisions the completion of the remaining stages of the Palisades Interstate Trailway and supports the completion of:

- The Orange County Heritage Trail
- The Harlem Valley Rail Trail
- The Putnam Trailway
- The Maybrook Trailway
- The Hudson Valley Trailway
- The Delaware and Hudson Canal Heritage Trailway
- The Wallkill Valley Rail Trail
- The South County Trailway.

These efforts will include a bike path from the George Washington Bridge to Bear Mountain using the right of way of the Palisades Parkway. The path in Orange County would be about four miles long from the Rockland County border to the Bear Mountain Bridge. NYSDOT's bicycle and pedestrian goal is a regional system of interconnected trailways that when combined with state bike routes will provide reasonable bicycle and pedestrian access to most areas of the region. The trailways will also be linked to rail stations in many locations.

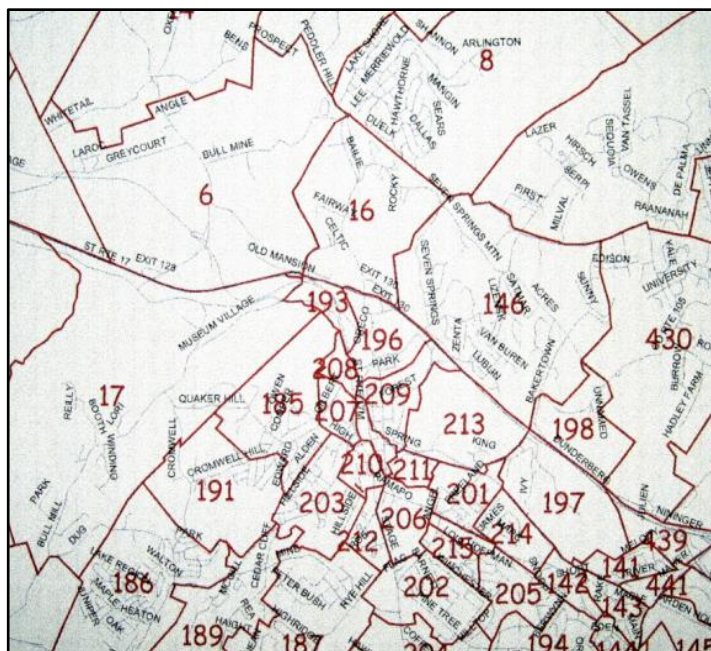
CHAPTER 8 | OCTC TRAVEL DEMAND MODELING

To determine the impact of future transportation projects, OCTC utilizes a “gravity model” process to replicate (in a computer) the existing traffic conditions and forecasted future travel demand. For this, OCTC presently uses the VISUM software package by PTV of America. Like most programs of this type, spatially accurate digital mapping is required to identify current and future land use conditions and highway characteristics for the modeling software. The OC Travel Demand Model incorporates housing data, employment data, and highway characteristics along with trip generation, trip distribution, and trip assignment inputs to replicate existing travel patterns within the computer travel model. Trips are distributed and assigned to the least time travel paths between traffic analysis zones based primarily on the methodology recommended in National Cooperative Highway Research Program Report 365 (NCHRP 365), *Travel Estimation Techniques for Urban Planning*. This model has been used for completed and on-going corridor studies, for air quality analysis, and for the development of this plan.

TRAFFIC ANALYSIS ZONES

An important part of travel demand modeling is the creation of Traffic Analysis Zones (TAZs). TAZ's are geographic areas that describe different types and quantities of land use. These zones represent areas with significant or unique travel characteristics and are often based on U.S. Census geographies (tracts, block groups, and blocks). Essentially, TAZs provide a means to aggregate different land use types geographically, convert such information into vehicular trips and determine the location where vehicular trips start and end in a roadway network. To accurately replicate base year traffic conditions, it is necessary to accurately describe the location of land use activities relative to where traffic actually enters and leaves the highway network. Not every driveway need be represented, however, only the significant local and collector roads channeling traffic to the roads and intersections being analyzed.

The OCTC Travel Demand Model incorporates 550 TAZs (515 internal zones and 35 external zones) connecting OC roads and highways with neighboring counties. The 515 internal TAZ's were created by first delineating limited access highways, rights-of-way (rail and power lines), state lands (Stewart Properties and Parks) and natural features (rivers and mountains) which divide OC by restricting directional traffic flow. These districts were then further subdivided into TAZs bounding residential neighborhoods and centers of activity (e.g. Malls and Central Business Districts) where vehicle trips tend to start and end. Housing and employment forecasts are made for each analysis year being evaluated. The forecasts are based on historic growth trends in OC, as well as projections made by other agencies. When used for air quality conformity purposes, the model is used to forecast vehicle miles traveled (VMT) and vehicular speeds for a set of analysis years as required by federal transportation regulations.



Orange County Traffic Analysis Zones (TAZs)

CHAPTER 8 | OCTC TRAVEL DEMAND MODELING

Population

Population and housing information from the 2000 Census are used as a basis for verifying the projections used in the OC Travel Demand Model for transportation conformity. It is assumed for travel demand purposes that OC will experience near constant levels of growth over the next twenty-years similar to those experienced over the past 30 years.

Employment

Employment information indicating the type and location of all businesses in the county along with the number of employed persons in each was obtained from the NYS Department of Labor for the year 2002. This information was separated into six categories (retail, mall, non-retail, office, school and institutional) and aggregated by type and location to determine peak hour trips for each TAZ in the OCTC Travel Demand Model. Employment projections were based upon expected employment from approved development projects yet to be constructed, as well as average commercial growth rates. The basic underlying premise is that future employment levels will be directly related to the influx of new people and increased demand for products and services created by the future growth in population and housing in the county.

Housing Units

Land use information from the NYS Office for Real Property Service for each parcel in the county was obtained for the year 2002 and aggregated by type and location to determine peak hour trips generated for both single-family and multifamily housing in each TAZ of the OC Travel Demand Model. Future single-family and multifamily housing units were projected based upon: proposed residential projects yet to be constructed in each TAZ, average growth rates in housing by municipality and the availability of sewer and water facilities. The resulting housing projections were compared to those made by the New York Metropolitan Transportation Council for reasonableness and deemed to be acceptable.

Households

Household information from the 2000 Census (Summary File 3) was used as a means of checking and verifying the housing data and occupancy information from the NYS Office of Real Property.

Vehicles Available

Information from the 2000 Census (Summary File 3) indicating the average number of vehicles available per housing unit was used to further refine the number of trips generated in each TAZ. This was done for TAZs primarily in urban areas, where high numbers of housing units exist without a corresponding high number of vehicular trips generated.

Transit Operating Policies

Coach USA, MTA-Metro-North Railroad, Newburgh-Beacon Bus Company, Middletown Transit, Monroe Bus Company and Kiryas Joel Transit provide the majority of mass transit services in Orange County along with 9 local dial-a-bus operators. According to Census Journey-to-Work information, only 4.7% of work

CHAPTER 8 | OCTC TRAVEL DEMAND MODELING

related travel in OC had a mass transit component, with a majority of this travel involving vehicular trips to and from park and ride lots in OC. While park and ride lots are included in the OC Travel Demand Model as trip generators, transit service is not modeled given the low rate of utilization in OC.

Transit Service Levels

The travel demand model does not incorporate significant changes in travel attributable to increased future transit service in Orange County. This assumption could change if economic or environmental conditions change unexpectedly so as to influence travel behavior and patterns.

Transportation System

The OC Model assumes that the regional transportation network will retain its ability to adjust to changes in travel demand with regard to vehicular traffic and mass transit services. This assumes that future transportation funding rates will be maintained and that technological advances in Intelligent Transportation Systems (ITS) will further improve the efficiency of the transportation system.

Road Network

The simulated road network within the OC Travel Demand Model consists of two components: links, which represent roads, and nodes, which represent intersections. Each is characterized by relevant data concerning the number of lanes, traffic control devices, turning lanes, and posted speed limits and area type (i.e. urban/rural) which determine the vehicle capacity of each link and node. In addition, each road segment (link) is assigned a functional classification in accordance with the National Highway Classification System. The road network in the OC Travel Demand Model is based on the NYS Data Product GIS Street Centerline file. The highway network in the OCTC Travel Demand Model includes all roadways that have a functional classification of interstate, arterial or collector. Not every local road is included -- only those that facilitate the through movement of vehicles and feed and augment collectors, arterials and interstates in the county. For example, roads to regional shopping malls, office parks and major residential developments are included because they are important locations where traffic enters and leaves the primary road network. Information concerning intersection signalization and number of turning lanes was collected in the field and from aerial imagery to determine capacity.

Trip Generation

Trip generation is the means of quantifying the number and type of trips to and from each TAZ in the OC Travel Demand Model based upon the type and amount of land use activity therein. Essentially, the purpose of trip generation is to have the model accurately reflect the average trip making characteristics of people over a specific timeframe. In this case, the average trip making characteristics of people in OC were determined for the PM peak hour, the time of day when traffic congestion tends to be the heaviest. Trips in the OC Travel Demand Model are first calculated for each TAZ and then separated into different types based upon purpose. The reason for separating trips by purpose is to account for variable trip lengths. Numerous travel surveys indicate that people are willing to drive farther between home and work than they are between home and shopping. Thus, the purpose of a trip determines its length; trip length, together with the number of trips generated in a model, determine traffic volumes and vehicle miles traveled.

CHAPTER 8 | OCTC TRAVEL DEMAND MODELING

Trip Production & Attraction

Trip production and trip attraction rates were obtained from the Institute of Transportation Engineers, Trip Generation Guide, and 7th Edition for commercial, office, and industrial land uses while origin rates for residential land uses were calculated from traffic counts taken at the entrances to major residential development throughout the county. Trip productions and trip attractions in the OC Model were then separated by purpose to account for variable trip length characteristics of drivers as documented in NCHRP 365, Travel Estimation Techniques for Urban Planning. Trip length is important because it influences traffic volumes, vehicle miles traveled and vehicular emissions.

External Trips

The Model uses external loading links to account for traffic that enters from an area outside of each county. External trips to and from areas outside OC were determined by the directional split of traffic on each major highway and road segments (external links) connecting Orange with the surrounding counties. Trips traveling through OC between external links were estimated using journey-to-work information from the Census 2000 Transportation Planning Package. External trips include those that start in the model area but leave it (Internal-External trips), start outside the model but end in it (External-Internal trips), or pass through on their way between two external points (External-External trips).

Trip Distribution

Trip distribution is the process by which trip origins are apportioned throughout a study area based on the number of trip destinations in each TAZ and the distance/travel time impedance between them. In so-called “gravity model” such as this, the assumption is that people tend to interact more when the travel time between them is less – the shorter the travel time, then the higher the frequency of interactions. Thus, there are a greater number of trips between places that are densely developed and located near one another than those less densely developed miles apart. Accordingly, vehicles in the OC Travel Demand Model are routed on the shortest distance/time routes between TAZs first, and then to other more circuitous routes as traffic congestion makes the shorter distance routes more time consuming.

Calibration

Generally, model calibration is the process by which the travel parameters of a model are adjusted to reflect actual base year traffic counts. Traffic volumes assigned by the model are compared to actual traffic counts through regression analysis. The differences between the counts and the assignment traffic volumes are used to modify trip generation rates, trip length exponents and, in some instances, land use quantities where errors become evident. One or two variables are modified followed by a model run to determine the effect of such modifications. This is repeated, iteratively, until volumes assigned by the model meet acceptable error deviation levels as defined in National Cooperative Highway Research Report 255, Highway Traffic Data for Urbanized Area Project Planning and Design. The OCTC Travel Demand Model is an invaluable tool for helping to understand how the highway transportation system functions and how it might function in the future under different development scenarios and changes to the system. The model is routinely used to forecast potential air quality emissions in the future in order to demonstrate conformity to Federal air quality regulations as administered by New York State and OCTC. Staff is working to identify the future path for travel modeling management, use, and associated hardware and software.

CHAPTER 9 | TMA CONGESTION MANAGEMENT PROCESS

One of the primary functions of a Transportation Management Area under Federal law is the development and use of a Congestion Management Process or CMP. A CMP is used in identifying, evaluating, and managing traffic congestion in the regional transportation network. The process empowers Metropolitan Planning Organizations to develop viable strategies to mitigate the causes and effects of congestion, and to press forward with implementing these strategies by working with the region's elected officials, private citizens, and transportation professionals.

The three MPOs in the Mid-Hudson Valley TMA agreed to develop and implement a single CMP for the TMA, which would outline the overall commonalities among the three MPOs – such as a single definition for congestion and common types of data collection – but also allow for locally derived methods to manage congestion in their individual communities.

There are six core components of a CMP:

1. Creating methods to monitor and evaluate the performance of a transportation network
2. Using quantifiable parameters to identify congestion
3. Establishing a program for data collection
4. Identifying and evaluating the benefits of congestion management strategies
5. Developing an implementation schedule
6. Instituting a process to periodically assess the CMS program

In addition to these basic tenets, the CMP for a TMA located in an ozone non-attainment area must meet additional criteria. These include the requirement for an appropriate analysis of all reasonable (including multimodal) travel demand reduction strategies where an increase in Single Occupant Vehicles (SOVs) capacity is proposed. If the analysis shows that the capacity cannot be met through demand strategies, then the CMP must identify strategies to effectively manage the expanded SOV facility. Federal regulations also state that federal funds cannot be programmed for any highway SOV project in a non-attainment area unless it is based on an approved CMP. These requirements apply to PDCTC and OCTC, since they are part of the EPA-designated Poughkeepsie Moderate Ozone Non-attainment Area; the UCTC lies outside this area. Additionally, OCTC is part of the multi-state non-attainment area for fine particulate matter.

Understanding Congestion

In general, there are two types of congestion: recurring and non-recurring congestion. Recurring congestion refers to congestion that arises on a routine basis at the same place and generally at the same time, a condition that may hint at a systemic imbalance between roadway capacity and existing demand – otherwise known as a “bottleneck.” Some refer to this as volume based congestion. Non-recurring congestion, on the other hand, occurs when a vehicle crash, road construction, or poor weather impedes traffic. This also includes traffic resulting from heavy demand associated with a special event, such as a County fair or holiday shopping. This is sometimes referred to as incident-based congestion. Our ability to formulate viable management solutions begins with an understanding of these two types of congestion. It also underscores the complexities of trying to measure and manage congestion, especially with regard to non-recurring or incident-based congestion, which can be extremely difficult to predict. For this reason the MHVTMA CMP focuses on recurring, peak hour congestion in the short term and then work towards addressing non-recurring congestion in the long term.

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CMP Strategy

Embracing the flexibility surrounding the process, the CMP addresses the statutory requirements through a four-step strategy tailored to the Mid-Hudson Valley. The purpose of using this methodology is two-fold: it is hoped that this format will ease the reader's understanding of this new congestion management system and, accordingly, plant the seed for taking action to manage severely congested areas. In the short term, the mission is to locate and manage severe, recurring congestion on road corridors and intersections in the tri-county, Mid-Hudson Valley Transportation Management Area. In the longer range, the mission is to expand the CMP to analyze non-recurring congestion, and to also identify congestion related to other modes of transportation (public transit, bicycle, and pedestrian) with the reality that financial and staff resources remain finite and that they must compete with other MPO requirements. Following are the four CMP steps:

1. Measure and Define: understanding the transportation system
2. Locate: finding severe congestion in the Mid-Hudson Valley
3. Manage: identifying realistic solutions and taking action on them
4. Integrate and Evaluate: making this CMP work in existing planning processes

The TMA agreed upon two methods to measure congestion: Volume-to-Capacity (V/C) ratios and Travel Time Surveys. The first method, V/C ratios, will serve as the short-range method for defining congestion among the three MPOs, while the latter will serve as the long-range method, pursued as time and resources become available.

Measuring traffic against V/C ratios tackles the issue of defining congestion from the perspective of supply and demand. A particular road has a finite physical capacity, a limit to the number of vehicles that can safely travel on the road at any one time. At a given point, the sheer number of vehicles on the road creates congestion and an unacceptable level of service: usually, but not limited to, morning and evening peak commuting periods. To quantify this level of service, a V/C ratio – or percent of capacity – is calculated for roadways and then translated into a descriptive level of congestion. Travel demand models can calculate current and future V/C ratios by taking traffic volume and dividing it by roadway capacity, which is primarily based on the road type (functional classification); this is a relatively simple calculation for today's modeling software.

The TMA uses a system of V/C measurements similar to ones employed in other areas around the country. These systems are variants of nationally accepted Level of Service (LOS) designations as defined by the Transportation Research Board in its *Highway Capacity Manual (HCM)*. In general, the *HCM* rates the efficiency of transportation facilities on a scale of A through F, with LOS A representing the ideal of free flow traffic and LOS F the worst with forced or breakdown flow. Building upon this type of rating system, many MPOs translate numeric V/C ratios into qualitative terms that better convey the level of congestion on a facility. A typical and effective approach classifies congestion into three general categories such as moderate, high, and serious, with each category equated to a range of V/C ratios. The Mid-Hudson TMA CMP uses a system that classifies recurring weekday, peak hour (e.g. 4-5 p.m.) congestion into three categories: moderate, heavy, and severe (Table 1). The categories relate to three simple ranges of V/C ratios. A facility operating between 80 to 89-percent of its capacity during peak periods is classified as having moderate congestion, while a facility operating at 90 to 99-percent of capacity is classified as experiencing heavy congestion. When the measured V/C ratio exceeds the 100-percent threshold, the facility is classified as having severe congestion. The over 100-percent threshold equates to LOS F.

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The benefit of using such a classification system is that it makes it easier for individuals and organizations to understand the levels of congestion on the region's roadways, and consequently easier to prioritize problem locations and better focus management strategies. It is also similar to a previous system used by NYSDOT-Region 8 to define congestion.

Vehicle-to-Capacity Ratio Designations for the Mid-Hudson Valley TMA CMP:

Level of Congestion	Vehicle-to-Capacity Ratio ¹
Moderate	V/C ratio = 0.80 – 0.89
Heavy	V/C ratio = 0.90 – 0.99
Severe	V/C ratio \geq 1.00

¹ *As calculated for weekday peak hour volume.*

In addition to using V/C ratios to identify congestion, the three MPOs agreed to pursue a second approach that incorporates travel time measurements in defining congestion. Incorporating the time component in our understanding of congestion acknowledges the importance of time to travelers, which can often be a better gauge of real-time congestion than traditional V/C calculations. The three MPOs will also work to: Incorporate NYSDOT Congestion Needs Analysis Model into the CMP; pursue advanced travel demand modeling; and work to adapt to changing trends and integrate new technology.

Traffic Congestion in Orange County

For the most part, Orange County roads and highways facilitate the efficient and safe flow of people and goods, with a few exceptions during the pm peak hour, which coincides with people leaving work and making their way home, and during seasonal travel peaks and crisis events. This includes periodic delay along stretches of NYS Route 17, US Route 6, and the NYS Thruway (I-87) during Friday and Sunday evenings, which are attributable to spikes in traffic from recreational travel including people traveling to and from the Catskills and destinations beyond. It also does not account for traffic congestion around Orange County's regional shopping malls at select times of the year (e.g. holiday shopping).

The second CMP step focuses on the identification of roads with moderate, heavy, and severe congestion during the weekday afternoon, peak hour period (4:00-5:00 pm). These were identified through the OCTC travel demand model. Because it is a computer model it will likely overlook some areas of congestion due to changes in travel patterns, other variables, or an inability to fully realize the dynamics of the system. The long range strategy of using travel time surveys to measure congestion on high volume roads will help in this effort. The following table identifies the location of congestion as modeled.

The OCTC model identified 31 lane miles of congested roads. Of this total, 29 miles are under NYS jurisdiction and roughly 2 miles under Orange County jurisdiction. In terms of congestion, 4.8 miles experienced heavy congestion, while 26.4 miles fell under moderate congestion. The on ramp from US 9W onto eastbound I-84 in the Town of Newburgh experienced the highest level of congestion with a V/C ratio of 0.97. Other heavily congested roads include the off ramp from I-87 northbound to US 17 westbound in the Town of Woodbury (Woodbury Open Tolling project has relieved some of this congestion), and NYS 211 from Wisner Ave. to Beattie Ave. in the City of Middletown. The OCTC model

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also identified 42 congested intersections in Orange County, with 11 experiencing heavy congestion and 31 experiencing moderate congestion. The data from this report is available on the OCTC website; in addition the congestion in the Newburgh area was the subject of additional analysis through the Newburgh Area Transportation and Land Use Study, available through the OCTC website.

The Mid-Hudson Valley Travel Time Survey

This survey was a Global Positioning System (GPS)-based travel time data collection study on all major roadways in support of the Mid-Hudson CMP and other transportation planning activities. The data collected in this project will allow the TMA to advance the CMP and provide “real-world” travel time data that can be used in developing projects, prioritizing funding, and calibrating the travel demand models to further improve reliability. The data can be used to identify congested routes. Those routes could be studied further to determine the root cause of the congestion -- whether it is operational issues, recurring incidents, insufficient capacity, or other causes, and additional studies could be conducted to identify potential roadway improvements. The data from this report could also be used to prioritize Transportation Improvement Program (TIP) projects. This database provides a baseline of travel time information which should be expanded and maintained in order to support congestion management-related decision making in the future.

Survey Design

All routes were surveyed during “typical” weekday periods (Tuesdays, Wednesdays, and Thursdays on non-holiday school days) and some were surveyed on weekends. The following time periods were used during the data collection process:

- Weekday Morning (AM) – 6:00 AM to 9:00 AM
- Midday/Off-Peak – 9:00 AM to 11:00 AM
- Evening (PM) – 4:00 PM to 7:00 PM
- Saturday – 9:00 AM to 3:00 PM
- Sunday – 4:00 PM to 7:00 PM

County MPO staff from Ulster, Dutchess and Orange Counties, identified the routes and time periods to be surveyed. Each route was identified by the starting point and ending point and divided into segments bound by traffic signals or just the starting or ending point. Travel time data was collected via a hybrid of the floating car method and the average speed method. Both methods have been deployed in numerous studies and are acceptable forms of travel time sampling. Here the two methodologies were combined to better simulate a “real-life” scenario. With the floating car method, the test vehicle stays in the center or right lane and the driver attempts to pass as many cars as pass the test vehicle. With the average car method, the driver tries to maintain the average speed of the traffic by traveling in either lane. The hybrid methodology maintains the average speed of the roadway, but if many cars are passing, the driver will pass some cars also. A Travel Time Index was used, which is the ratio of the peak period travel time to free-flow travel time. For example, a value of 1.30 indicates that what is a 30-minute free-flow trip actually required 39 minutes because of traffic congestion. Generally, a road segment is considered congested if the Travel Time Index (TTI) exceeds 1.30. Twenty-eight of the forty-four Orange County Routes surveyed had TTIs over 1.3 during one or more surveyed time periods, which indicates the roadways experience congestion. Thirteen routes experienced TTIs over 1.3 during all of the surveyed time periods. The extensive data tables and analytical narratives are posted in the report on the OCTC website.

The Clean Air Act Amendments of 1990 (CAAA), SAFETEA, and MAP-21 require that transportation activities conform to State air quality implementation plans before receiving federal transportation funding. The CAAA establishes National Ambient Air Quality Standards (NAAQS) for specific pollutants (e.g. ozone, Particulate Matter, Carbon Monoxide, and Nitrogen Dioxide). In regions where these standards are not met (non-attainment areas), it must be demonstrated that all future transportation plans and projects do not produce new air quality violations, worsen existing conditions, or delay timely attainment of the NAAQS. This is accomplished through transportation network modeling and calculation of estimated future emission, which is documented in a conformity determination. If conformity cannot be demonstrated or if an existing conformity determination expires, the non-attainment area lapses and restrictions are placed on the use of federal transportation funds; exceptions to this rule include funding for safety, mass transit, and air quality improvement projects.

The overall goal of transportation conformity is to ensure that transportation projects and the transportation system as a whole do not create new air quality violations or worsen existing violations. Travel demand modeling provides a means of quantifying vehicle miles traveled (VMT) and average vehicular speeds by functional classification of roadway. These outputs are utilized to calculate vehicular emissions using a motor vehicle emissions model. Forecasted VMT and speeds, combined with pollution rates per mile traveled, provide an estimate of the total amount of vehicle pollution in a given time period. VMT is a unit of measure which expresses the number of miles traveled by vehicles (e.g., cars, vans, trucks, motorcycles), regardless of the number of persons in the vehicle. One motorcycle with no passengers traveling one mile would be measured as 1VMT, just as a van with a driver and 5 occupants traveling one mile would also be measured as 1 VMT.

Orange County was in nonattainment for ground level ozone and fine particulate matter (PM_{2.5}) when the OCTC LRTP was last updated in the year 2011. Since that time, air quality has improved. OC is now in attainment for ozone and is in moderate attainment of PM_{2.5}. Ozone attainment areas are not subject to EPA transportation/air quality regulations while moderate PM_{2.5} attainment areas with maintenance plans must still demonstrate compliance with such regulations. EPA air quality regulations are anticipated to become stricter, however. The EPA is expected to reduce the allowable levels ozone and PM_{2.5} in the atmosphere in order to further protect public health. Thus, OC may again be classified to be in nonattainment for ozone and PM_{2.5} in the near future.

FINE PARTICULATE MATTER ATTAINMENT / NON-ATTAINMENT BACKGROUND AND STATUS

Fine particulate matter is a mixture of microscopic solids and liquid droplets suspended in the air less than 2.5 micrometers in size, hence called PM_{2.5} (this is about one-thirtieth the diameter of a human hair). Fine particulates can be emitted directly (such as smoke from a fire, or as a component of automobile exhaust) or be formed indirectly in the air from power plant, industrial and mobile source emissions of gases such as sulfur dioxide and nitrogen oxides. Scientific studies have shown a strong relationship between elevated fine particulate matter and decreased lung function, asthma attacks, as well as certain cardiovascular problems such as heart attacks and cardiac arrhythmia. While fine particulates are unhealthy for anyone to breathe, people with already compromised heart or lung function, as well as older adults and children are particularly at risk.

In July 1997, EPA issued NAAQS for fine particulate matter to protect the public from exposure to levels that may cause health problems. The 24-hour standard for $PM_{2.5}$ is set at 65 micrograms per cubic meter based on a 3-year average of the 98th percentile of 24-hour $PM_{2.5}$ concentrations. The annual standard for $PM_{2.5}$ is set at 15 micrograms per cubic meter based on the 3-year average of annual mean $PM_{2.5}$ concentrations. Regions not meeting the $PM_{2.5}$ NAAQS, or that contribute to violations of the standard in other regions, are deemed to be $PM_{2.5}$ non-attainment areas by the EPA. On April 5th, 2005, the EPA designated Orange County to be part of the NY-NJ-CT $PM_{2.5}$ Non-Attainment Area along with New York City, Rockland County, Westchester County, Long Island, Northern New Jersey and Southwestern Connecticut.

Effective April 18, 2014, EPA approved New York State's request to re-designate the New York portion of the NY-NJ-CT $PM_{2.5}$ nonattainment area to attainment for the 1997 annual and 2006 24-hour $PM_{2.5}$ standard. As part of the re-designation to attainment, EPA also approved the New York State air quality "Maintenance Plan" for $PM_{2.5}$. Thus, for air quality and transportation planning purposes, the area is referred to as a $PM_{2.5}$ Maintenance Area. The NY-NJ-CT metropolitan area is classified attainment for the 2012 $PM_{2.5}$ NAAQS. However, the air quality maintenance plan for the 1997 and 2006 particulate matter standards is still in place. Thus, OCTC remains subject to the transportation/air quality conformity requirements.

Interagency Consultation & Coordination

As part of EPA's Transportation Conformity Regulations, interagency consultation and coordination are required. The NYS Interagency Consultation Group (ICG) is comprised of representatives from the U.S. Department of Transportation (Federal Highway and Transit Administrations), EPA – Region 2, NYS Department of Environmental Conservation (NYSDEC), the NYS Department of Transportation-Environmental Services Bureau (NYSDOT-ESB) and OCTC. The group provides multi-agency guidance concerning the conformity process, as well as concurrence on the assumptions and methodology used to forecast vehicle miles traveled (VMT) and vehicular speeds with the OCTC Travel Demand Model. Generally, these outputs (VMT and vehicular speeds) form the basis for the "regional emissions analysis" using the most current version of EPA's vehicle emissions computer model, MOVES to calculate vehicle emissions and the air quality impact of nonexempt projects in the OCTC LRTP and TIP. NYS ICG procedure is part of NY State Implementation Plan to reduce emissions and improve air quality. Failure to comply with established NYS ICG procedures constitutes a violation of the NYS SIP.

Latest Emissions Model

MOVES (Motor Vehicle Emissions Simulator) is the EPA's model for estimating emissions from all on-road vehicles including cars, trucks, motorcycles and buses. As compared to the previous EPA emissions model, MOBILE6.2, MOVES incorporates substantial recent emissions test data and accounts for changes in vehicle technology and regulations as well as improved understanding of in-use emissions levels and the factors that influence mobile source emissions. All regional emissions analyses that began on or after March 2, 2013 are required to use MOVES per EPA regulations.

The transportation network impact of the Enhanced Commuter Choice, 511NY Rideshare, and Newburgh Area Bus Expansion projects are estimated with an "off-model" methodology using the EPA COMMUTER model and project-specific data. Accordingly, the emissions impact of these projects on the activity cycle of

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a limited number of passenger vehicles and transit buses were estimated using emission rates that were generated in MOVES.

Identification of Exempt/Non-exempt and Regionally Significant Projects

An important part of transportation conformity involves identifying transportation projects that may affect regional air quality. In most instances, projects such as safety improvements, resurfacing, bridge repairs, promote existing ridesharing programs, improving bicycle and pedestrian modes of travel, and/or operation/replacement of existing transit facilities and bus replacements, which maintain current levels of service or capacity, are considered exempt from conformity analysis. Similarly, projects that result in operations improvements, but do not increase capacity, are also excluded from the analysis. Inversely, there are two types of projects (Non-exempt and Regionally Significant) that have the potential to affect air quality. Nonexempt transportation projects are those, for the most part, that increase the capacity of the transportation system. Examples include the construction of new roads, highway interchanges and train stations, as well as the widening of existing roads and the significant expansion of transit services and facilities such as park and ride lots. Regionally significant projects are those, regardless of funding source, that serve regional transportation needs and that would normally be included in the modeling of a metropolitan area's transportation network. They include all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel. A non-exempt determination is made if the project type is not found in the list of exempt projects derived from 40 CFR Part 93.126, 93.127 and NYCRR Part 240.27. OCTC develops lists of projects for review and concurrence by other members of the ICG. Following are the non-exempt projects included for this plan update.

OCTC Nonexempt Transportation Projects -- 2015 Long Range Transp. Plan Update

PIN	Project	Agency
814522	Schutt Rd. – Construction, Dunning Rd. to North Galleria Dr.	T/Walkill
881054	Ozone Action Days	NYS DOT
882038	Metropool Ridesharing Program to Van & Carpool Commuters	NYS DOT
882383	Enhanced Commuter Choice	NYS DOT
875924	CMAQ Funding For Newburgh Area Bus Service	Orange Co.
N72224	<i>For Informational Purposes Only:</i> Construction of New Interchange 15B on I-87	NYSTA

Note: no change from projects in 2014 conformity analysis

Methodology

Emissions analyses are based on speed specific emission factors generated by MOBILE 6.2 for each link in the OCTC Travel Demand Model network for the morning peak hour, mid-day peak hour, afternoon peak hour and night off-peak hour. Vehicle miles traveled and ozone emissions for each of the four peak hours were factored into peak period values using hourly VMT percentages for OC from the NYS SIP.

The resulting peak period VMT and emissions were then adjust to account for seasonal fluxes in traffic during the summer ozone season (June, July & August) and summed to establish total daily VMT and precursor ozone emissions. Annual direct PM_{2.5} and NOX Emissions were calculated based on 182 days under winter conditions (October 1 – March 31) and 183 under summer conditions (April 1 – September 30).

As discussed previously, the inputs of the emissions model are traffic volume and speed data provided by OCTC and the most recent fleet characteristics, seasonal meteorological factors and assumptions concerning reformulated fuel and other control programs established by NYSDEC and through consultation and agreement with the Multi-State Interagency Consultation Group for the Ozone and PM_{2.5} Non-Attainment Areas.

For further and more detailed information the conformity analyses for this update and for travel modeling and air quality conformity in general, please visit the OCTC website.

CHAPTER 11 | CURRENT & FUTURE PLANNING

This update of the OCTC Long Range Transportation Plan, being a snapshot in time of a combination of planning processes, describes existing plans (short and long range) as well as planning which is underway or is to be undertaken in the future. The existing plans include the previous long range plan, completed OCTC and member agency plans, and the current OCTC TIP. Current and future planning is comprised of activities which are either funded through the OCTC UPWP or will be undertaken using member agency funding (or a combination of both). All of these plans, to one degree or other, are comprised of various types of implementation elements. In general, these elements can be grouped in two principal categories, the first being specific projects which will be undertaken with Federal and other funding in order to construct, maintain, improve, or operate transportation systems in the County. The other category is comprised of all other types of implementation which do not expressly identify a specific project to be carried out or constructed. These include: goals, objectives, policy statements, and non-project recommendations, including those for future planning studies (some of which will eventually result in specific project proposals and other recommendations).

This chapter will outline and discuss these various plans, planning activities and implementation measures. It will begin with a review of the foundation of the required MPO planning process, followed by a discussion about the previous long range plan and the local foundation for planning within the County Comprehensive Plan. The explicit, project-oriented short range plan which is the TIP will be described, as will the project-oriented elements of the previous long range plan which are being carried forward. The UPWP is discussed; detailed information on the current UPWP can be accessed at the OCTC website. Chapter 13 details OCTC goals and objectives, together with recommendations grouped by topic.

FEDERAL PLANNING GUIDANCE

Guidance for how the transportation planning process is to be carried out and what, at a minimum, is to be examined is provided in Federal legislation. There are eight federal planning factors which are to be considered in State and Metropolitan transportation planning programs and projects:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency
2. Increase the safety of the transportation system for motorized and non-motorized users
3. Increase the security of the transportation system for motorized and non-motorized users
4. Increase the accessibility and mobility of people and for freight
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight
7. Promote efficient system management and operation
8. Emphasize the preservation of the existing transportation system

OCTC works to incorporate the planning factors from Federal transportation legislation into the goals and objectives for planning. Recently, the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) encouraged giving priority to certain emphasis areas: Transition to Performance-based Planning and Programming as part of implementing MAP-21; promotion of a regional approach to planning by fostering cooperation and coordination across MPO, Transit Agency and State boundaries; and the Ladders of Opportunity effort which encourages State DOTs, MPOs, and providers of public

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transportation, as part of the transportation planning process, to identify transportation connectivity gaps in accessing essential services.

PREVIOUS OCTC LONG RANGE PLANS

The OCTC long range plans prior to the 2007 plan were organized in part based on a presentation of three alternative future growth scenarios: the incremental future, the land use planning future, and the technology future. The incremental future described essentially business as usual without significant changes in factors affecting transportation. The land use planning future was based on a profound shift of planning and development investment away from ‘sprawl’ and toward a more nodal pattern of multi-use ‘pedestrian pockets’ which would support substantial transit use. The technology future explored a ‘what if’ scenario based on telecommuting. The experience over the last decades has been essentially incremental change overall, with some aspects of all three occurring. The usual business of transportation planning, programming, construction, and management has been met with some changes in the land use planning arena toward ‘smart growth’ but not nearly to the degree discussed in the land use planning future scenario. By the same token, computer, phone, and networking capabilities have expanded substantially but telecommuting is far from replacing actual commuting. Following are descriptions of these previous scenarios:

The Incremental Future

Assumed that transportation in the County would continue to reflect the pattern of development that had occurred in the previous 25 years. The vast majority of trips would continue to be made by private vehicles and investment in expanded roadway capacity would continue. Land use patterns and policies would not change dramatically; then current development trends and patterns would continue incrementally.

The Land Use Planning Future

Assumed that environmental impacts and the desire for a higher quality of life required major changes in land use. Those land use changes could be dramatic enough to significantly reduce the amount of travel by personal vehicle. Potential investment in that future focused on financial incentives as well as education/marketing to foster efficient settlement patterns consistent with transit investment and associated infrastructure for alternative modes. The plan discussed the potential of recreating rail service on a line that was abandoned twenty five years ago and focusing new mixed use development ‘pedestrian pockets’ there.

The Technology Future

Two advances in technology were discussed in regard to their potential to affect the transportation system in the County. One, major advances in communication/ information technology would be significant enough to lower the demand for personal mobility, alleviating requirements for individuals to be physically located where they work, shop, or recreate. Two, a combination of technologies would be integrated to allow more efficient use of the highway system. Those included non-polluting energy sources, navigational guidance systems, crash-avoidance radar, and electronic pricing.

Instead of three scenarios (with three somewhat separate examinations of needs), the 2007 plan (and the subsequent updates) acknowledge that the future will, like the recent past, most likely bring incremental efforts and incremental progress in a number of areas. As with the previous plans, it acknowledges the

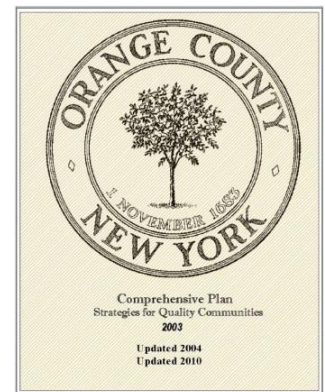
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significant and substantial interrelationship between transportation systems and the land uses and activities which they connect. It looks to the Orange County Comprehensive Planning program and its priority growth areas as a foundation; it suggests a pragmatic outlook on the future which blends business as usual and the promotion of smarter growth with an awareness that technology will continue to shape how people and systems operate.

ORANGE COUNTY COMPREHENSIVE PLAN

The Orange County Comprehensive Plan is intended to provide a county-wide context for decisions on how land might be best used, developed, protected or preserved and how financial, technical and infrastructure resources might be effectively provided. It also helps to define a common understanding about the trends, assets and challenges faced by the county and its partner municipalities. The Orange County Comprehensive Plan was last updated in 2010 and is required by County Charter to be updated every five years. The County Open Space Plan and, as of 2010, the Water Master Plan are also components of the County's Comprehensive Plan.

The County Comprehensive Plan is built around the concept of priority growth areas – areas to which future county development is to be focused due to the presence of existing development centers, the availability of existing infrastructure and services, and the protection of environmental resources, open spaces and rural areas. Priority growth areas are part of an urban-rural growth concept which has been at the heart of the Orange County Comprehensive Plan for over twenty-five years. This concept encompasses many of the planning and design tenets which are now referred to as “smart growth”. (Refer to Chapter 3 for map of Priority Growth Areas.)



The county plan calls for future major growth in housing, business and industry to locate in and around existing cities, villages, and urbanizing areas, where major highways are nearby and where central water and sewer services are available. The basic thesis of this concept is that the economy of existing facilities will be maximized, public transit will be fostered, and it will provide the most economical and environmentally-sound form of development. By focusing development to these areas, a major portion of the County can be kept green, and those areas will not have extensive public services. This priority growth area strategy is somewhat loosely related to the pedestrian pocket concept of the ‘land use planning future’ scenarios described in prior OCTC transportation plans. This connection is understandable because the county plan is itself based partly on the findings of previous OCTC transportation plans.

Adoption of the County Comprehensive plan has two key effects, both of which can be significant in looking at implementation of planning policies at all levels:

1. All county land acquisitions and public improvements shall be in accordance with the County Comprehensive Plan.
2. All plans for capital projects of a municipality (including the County) or state governmental agency on land included in the county must take this plan into consideration.

It must be emphasized that New York is a home rule state where the primary control over land-use policy, regulation, and development review rests with municipal governments. Nevertheless, through general

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municipal law regarding county comprehensive plans and inter-municipal coordination of planning and zoning actions, and through the work of such cooperative forums such as the transportation council, a certain degree of coordination is required. The Orange County Comprehensive Plan states, "The County and its municipalities should coordinate local planning efforts with their neighbors, and work closely with regional agencies, such as the State Department of Transportation (DOT), the New York Thruway Authority and NJ Transit, as they plan for transportation facilities that affect local conditions."

The Orange County Open Space plan, a component of the Comprehensive Plan, was first adopted by the Orange County Legislature in 2003. The purpose of the Open Space Plan is to outline strategies for maintaining the county's scenic beauty, rural character, and ecological health while providing for increased recreational opportunities. This was accomplished through a thorough county-wide inventory of the locations of preserved lands, parklands and recreation facilities and of natural resources (e.g. rare species, valuable habitats, scenic landscapes). This was followed by prioritization of those areas and resources in regard to the need for protection. As a planning tool and as a component of the comprehensive plan, the open space inventory and plan is relied on to generate positive impacts on private and public land use, development, transportation and other decisions in specific areas.

Orange County, through its Planning Department and other agencies, has responsibilities and carries out other planning initiatives which support comprehensive planning and therefore affect transportation planning and decision-making. These include on-going agricultural and farmland protection planning, watershed and riparian corridor studies and planning, and water and sewer infrastructure planning. The County worked with other counties in the region to assess housing affordability issues, which informed the housing element of the 2010 Comprehensive Plan.

Among its other duties, two key responsibilities of the County Planning Department involve staff support for the Orange County Transportation Council, which includes overseeing and carrying out the Unified Planning Work Program, and reviewing municipal actions related to zoning, planning, and subdivisions. The County Planning Department also manages the county's transit program, overseeing the payments of state and federal operating assistance (and preventive maintenance funding), programming and expenditure for transit capital equipment and projects, coordination of local transit activities, and related planning.

NEW YORK STATE SMART GROWTH INFRASTRUCTURE POLICY ACT

On August 30, 2010, Governor Paterson signed the Smart Growth Public Infrastructure Policy Act into law and it took effect 30 days later. The Act is intended to minimize the "unnecessary cost of sprawl development" and requires State infrastructure agencies, including NYSDOT, to ensure public infrastructure projects undergo a consistency evaluation and attestation using 10 Smart Growth criteria set out in the Act (see below). NYSDOT supported the Smart Growth Public Infrastructure Policy Act Legislation and since the Act became Law in 2010, NYSDOT has undertaken a comprehensive, agency-wide, phased implementation effort to integrate the requirements of Law into the existing, federally-required transportation project development process.

To the extent practicable, projects must align with the following:

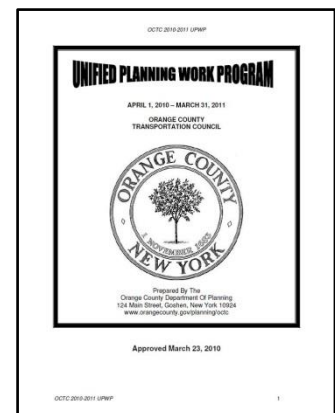
- To advance projects for the use, maintenance or improvement of existing infrastructure
- To advance projects located in municipal centers

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- To advance projects in developed areas or areas designated for concentrated infill development in a municipally approved comprehensive land use plan, local waterfront revitalization plan and/or brownfield opportunity area plan
- To protect, preserve and enhance the state's resources, including agricultural land, forests, surface and groundwater, air quality, recreation and open space, scenic areas, and significant historic and archaeological resources
- To foster mixed land uses and compact development, downtown revitalization, brownfield redevelopment, the enhancement of beauty in public spaces, diversity and affordability of housing in proximity to places of employment recreation and commercial development and the integration of all income and age groups
- To provide mobility through transportation choices including improved public transportation and reduced automobile dependency
- To coordinate between state and local government and inter-municipal and regional planning
- To participate in community based planning and collaboration
- To ensure predictability in building and land use codes
- To promote sustainability by strengthening existing and creating new communities which reduce greenhouse gas emissions and do not compromise the needs of future generations, by among other means encouraging broad based public involvement in developing and implementing a community plan and ensuring the governance structure is adequate to sustain its implementation.

UNIFIED PLANNING WORK PROGRAM

A portion of the Federal funding for surface transportation is dedicated for planning. It is in large part through this funding that MPOs like the Orange County Transportation Council undertake planning studies and continuing staff activities. Funding for planning is provided to the states by both the Federal Highway Administration and Federal Transit Administration. New York State divides this funding annually among the fourteen MPOs in the state based on a formula developed in consultation with the MPOs. Each MPO is required to annually develop and carry out a Unified Planning Work Program (UPWP) to identify how it will undertake planning and support for MPO activities. The annual cycle for the UPWP is based on the New York State fiscal year which begins in April.



Federal funding authorization for transportation planning has been increasing. In addition to new annual funding for the UPWP budget year, OCTC still has available funds for programming from prior UPWP budget years. These are funds which were apportioned to OCTC but which were not programmed or expended during the UPWP budget year in which they were first made available. This planning funding, like other Federal transportation funding, is administered through the NYS Department of Transportation as a reimbursement program. OCTC (through host agency Orange County) must first undertake the planning activities, after which it is reimbursed for the Federal share of the activity. The match rate overall is 80% Federal to 20% Local (15% State & 5% Local). OCTC staff in the Orange County Planning Department administers UPWP activities and submit reimbursement requests and activity reports to NYSDOT quarterly. A portion of the UPWP allocations for Orange, Dutchess and Ulster County's represents dedicated funding for planning activities related to the Mid-Hudson Valley Transportation Management Area.

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Aside from coordinated planning activities funded through the OCTC UPWP, each transportation agency and each municipality necessarily carries out planning specific to their responsibilities, consisting of a combination of operational, facility, and financial planning. Planning of the transportation council and its member agencies is continuing and dynamic. As members and participants in OCTC activities, and due to the fact that Federal, State and Authority funding implementation projects are programmed through the OCTC TIP, the transportation planning activities of member agencies are necessarily coordinated to some degree even though the operational planning and detailed facility planning of the various individual agencies is not funded through the UPWP.

The OCTC planning work program describes both recurring, regular staff activities that support the operation of the MPO as well as special planning projects which are either special staff-level projects or larger scale planning studies involving the use of outside transportation planning consultants. The analyses and recommendations from these studies are used to inform transportation investment and related community decisions. Two examples of completed studies are 2005 Southeast Orange County Traffic and Land Use Study and the Newburgh Area Transportation and Land Use Study completed in 2012. Significant future projects include transportation and land use studies of the Middletown urbanized area and western Orange County, building on the experiences and lessons learned from the SEOC and Newburgh Area efforts. These and other studies are described below.

Southeast Orange County Studies

The Orange County Department of Planning in conjunction with NYSDOT and the Southeastern Orange County Traffic Task Force carried out a UPWP supported study of the land use trends and transportation needs for the areas in and around the Towns of Monroe, Woodbury and Blooming Grove. The study was undertaken due to the growth in commercial and residential development and the significant traffic congestion which has been generated along State Routes 17, 17M, 32, and 208, County Route 105, and other roads and intersections in the area which impede the safe and efficient movement of people and goods.

The study was prepared by a consultant team led by AKRF, Inc. One facet of the study was to formulate short-term transportation improvements to enhance pedestrian safety and the movement of traffic through the Route 17, 32, 17M and 208 corridors. These improvements included the retiming and synchronization of traffic signals, the implementation of traffic calming techniques and the construction of service roads to enhance access and egress.

The SEOC Traffic and Land Use Study, completed in January 2005:

- Identified existing transportation problems in the study area
- Determined the impact of commercial, industrial and residential growth
- Forecasted likely future problems in the highway network utilizing the OCTC Travel Demand Model
- Investigated the need for a new interchange along Route 17 (I-86) with County Route 105
- Explored the possibility of establishing an inter-modal center in the study area
- Recommended transportation management strategies, access management techniques, infrastructure improvements, and changes in land use to mitigate traffic problems including an extension of Larkin Drive to County Route 105

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- Developed, in cooperation with local governments, priority transportation projects and land use recommendations for the Towns of Blooming Grove, Monroe and Woodbury, as well as the Villages of Harriman, Kiryas Joel and Monroe that complement and protect the transportation capacity of the improvement alternatives

The study, its executive summary and other information is available on the OCTC website: www.orangecountygov.com/planning/octc.

As a result of this continuing southeast area inter-municipal, inter-agency networking, and follow-up to the AKRF study process, Orange County subsequently provided a Community Planning Grant to the SEOC municipalities to more fully examine land use and community design issues. The Regional Plan Association (RPA) was engaged to facilitate that effort, designed to include a two day visioning charette. Leading up to the charette, RPA community design professionals reviewed AKRF and other planning analyses and recommendations, then engaged community leaders in discussions about development trends, local resources and municipal plans. The visioning charette was held in September 2006 for which RPA was able to attract a small group of nationally recognized community design and land use planning professionals.

A central focus of the charette was the identification and description of “green infrastructure” and “gray infrastructure” systems within the SEOC area. Green infrastructure is a term that is used to describe natural, recreational, and open space resources. Gray infrastructure refers to roadways, and water, sewer and other utility systems. Through awareness, respect and use of these systems, the professionals and assembled community participants outlined potential alternatives for smarter growth. In preparation for the charette (and finalized after), RPA planning and design professionals developed a ‘business as usual’ plan drawn on wall sized aerial photos of the southeast area showing a likely result of subdivision development following the current planning and zoning in the area. The charette design team incorporated these gray/green infrastructure and business as usual ideas into the charette, first illustrating in general terms the gray and green infrastructure and then illustrating smarter growth potential land use plan concepts and site-scale sketch designs. These included development focused on existing centers and hamlets, the potential for new hamlet development centers, focusing development away from the green infrastructure, taking advantage of and enhancing the gray infrastructure.

The RPA staff continued to develop and complete the concept plans and site design drawings which were created during the charette. One of these drawings was a smarter growth wall size aerial photo drawing as a counterpoint to the pre-charette business as usual version. In addition, RPA worked to write a report on the visioning process and charette, which incorporated the design drawings. This work culminated in presentations to the planning, zoning, and governing boards of each SEOC community. This report is available on the OCTC website.

Through this effort, the potential for Transit Supportive Development at Harriman Station was emphasized, which was further examined as part of a NYSMPO Shared Cost Initiative. The recommendations from the case study were incorporated in a set of zoning regulations developed with funding from Orange County and which have been adopted by the Village of Woodbury.

Newburgh Area Transportation & Land Use Study

The Newburgh Area Transportation and Land Use study was a multi-year effort to examine transportation and land use within the northeastern portion of the county, while looking certain key areas and topics in

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more detail. The goal was to develop a multi-modal plan for transportation, integrated with local and regional land use planning policies. The overall context of the Study recognizes the potential for growth in this key portion of the county stemming from:

- Its strategic location along two major interstates (I-84 and I-87) and the revised interchange of those two roadways that makes this area a crossroads for freight travel (and jobs);
- The proximity of Stewart Airport and the potential for increased utilization of the airport for passenger and freight services as well as the attendant economic development that might serve the different needs of those user groups;
- Other regional transportation studies that are seeking to improve connections with the downstate and New York metropolitan regions through transit access and/or improvements to the Tappan Zee Bridge;
- The County's own comprehensive planning efforts that focus on Priority Growth Areas, Open Space protection, water supply, and congestion management; and
- The comprehensive plans of each of the communities in the Study Area that each look to promote revitalization of existing centers and improvement of the quality-of-life for area residents.

The study area included all of the municipalities which make up the OCTC Newburgh / northeast region: the City of Newburgh, the Towns of Newburgh, New Windsor, Cornwall and Montgomery and their respective Villages. Certain smaller areas and transportation corridors were highlighted in the scope of work for more detailed investigation, analysis, design exploration and recommendations including Route 17K, Route 32, Route 52, Route 207, Route 9W, and Route 300.

The primary elements of the Study were:

- A land use build-out to look at growth patterns in the future combined with a regional Travel Demand Model to assess future traffic flows and patterns
- A series of corridor studies looking at land use and roadway conditions and identifying where strategic investments could be made to improve traffic flow
- A transit study looking at the Newburgh area local bus service
- A bicycle/pedestrian study that sought new opportunities for improving connections for non-motorized trips
- Illustrative examples of what a Smart Growth land use pattern would look like in the Study Area communities

The Study Team comprised a group of planners, engineers, and transportation experts who were guided by interaction with each of the Study Area municipalities and the general public through a series of focused interviews, roundtable discussions, and public design workshops and open houses.

The Study Team also met with elected officials, local planners and engineers, and members of the interested public to understand key concerns of the community. Overall, several hundred individuals participated in meetings of one form or another – and many of those individuals participated at more than one meeting. There were nearly 500 people on the Study mailing list receiving updates and notifications for meetings. People were also able to obtain project information from a Study website. Newburgh Study materials are now accessible at the OCTC website.

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At the core of the Study Team’s integrated transportation and land use planning process were the principles of Smart Growth and Sustainable Development – both of which seek to encourage appropriate levels of investment in roadway, infrastructure, and land development based upon historic community patterns and desirable patterns of development that seek to minimize costs to the community and costs to the environment while enhancing the quality-of-life for the community.

The analysis of regional traffic conditions and potential local improvements was based on an analysis of projected year 2035 traffic growth that was developed from a set of regional land use build-out analyses. The 2035 projection used population projections prepared by Orange County that indicate that the Study Area will likely see the need for another 13,000 new housing units and about 15,000 new jobs over the next 25 years. The land use build-out analyses looked at several different patterns of development including “business as usual” and two smart growth alternatives based on the municipal comprehensive plans.

Based on input from municipal officials, the public, and observations by the study team, 18 traffic “hot spots” were identified where congestion is known to occur or is likely to occur given future land use patterns. At each of those hot spots, future traffic volumes were assessed and a volume/capacity ratio was calculated to assess the level of congestion anticipated in the future. That analysis shows that, of the 18 locations examined, some would be minimally affected or could have added traffic accommodated via low-cost, readily-implementable traffic improvements such as lane striping or introduction of left turn lanes. Other intersections could accommodate projected traffic growth via more moderate cost improvements such as converting shoulder areas to travel lanes, minor roadway widening without right-of-way (ROW) acquisition plus the low-cost measures cited above. Still others would be more substantially congested and would need more extensive roadway widening and lane additions and possible ROW acquisition—the intersection of Route 207 and Route 300 is a prime example of this. There were some locations where even substantial roadway improvements might not be sufficient to accommodate traffic—the intersection of Route 300 and Route 17K and the length of Route 300 from south of Route 17K to north of the Thruway on/off ramps is a prime example of this. This range of easy-to-improve locations to difficult-to-improve locations is not unusual, and can also be used to help guide land use development decisions going forward.

The travel demand model also identified a few locations where traffic growth could have an acute effect on roadway conditions and operations. One is the Route 207 corridor from Route 300 to west of Stewart Airport; it is clear that some significant level of roadway treatment is warranted, either with the addition of through travel lanes in each direction at some locations, the inclusion of left- and/or right-turn lanes at other locations, and a reconstruction of the bridge carrying the Thruway over Route 207 coupled with significant widening of Route 207. A second is the length of Route 300 approaching Route 17K from the south to as far north as Route 52. Segments of Route 300 may need to be widened, while other more “creative” treatments may be needed to deal with the issues at Route 300/Route 17K where widening itself may not be desirable or sufficient. Similar issues may be expected along Route 9W from the vicinity of Fostertown Road to south of Route 52. Detailed planning and engineering studies are warranted at these locations.

Finally, the Study Team evaluated the potential benefit of new roadway connections—links in the network that may not have been built as part of incremental subdivision or development of land to date, and which may be considered for the future. While natural features preclude the creation of a dense network of interconnections, there may be some opportunities to create strategic linkages to take pressure off existing points of congestion or congested corridors. The travel demand model did show that a parallel roadway east of Route 300 would serve to reduce congestion along Route 300, especially at the most congested

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intersections such as Route 52 and Route 17K. Additional study would be required to determine the feasibility of creating new roadway links such as this one. However, at a minimum, municipalities should be encouraged to retain existing roadways for through traffic and to identify opportunities to make new connections as part of the land subdivision process.

The prevalent lesson learned from the analysis of regional land use and traffic growth is that even with significant levels of investment in new roadway infrastructure, traffic congestion will continue to be a problem into the future. Only with a balanced set of enhancements to regional land use patterns can long-term value from roadway investments be achieved.

There are locations within the Study Area where there are opportunities to dramatically improve the area's land use/development, urban design and transportation, all as part of a package of treatments. Two very prominent locations that come to mind are the Broadway corridor within the City of Newburgh and the Vails Gate area. The Broadway corridor can be redesigned for better use of its overly-generous curb-to-curb width to incorporate various roadway or urban design treatments such as a landscaped median, bike lanes, bus lanes, and corner "bulb-outs". Reconstruction based on a new streetscape design approach could result in an exceptionally attractive urban corridor (or "Complete Street") for the city. Vails Gate, with its five-legged intersection, multiple curb cuts, and congestion, would need a major planning and design effort but doing so could vastly improve intersection operation and therefore add value to the commercial properties; even more so if the intersection and roadway reconfigurations were designed in concert with redesign of the adjacent commercial areas.

Several of the corridors in the study area have opportunities for significant new development and several of the communities have specifically modified their comprehensive plans to identify this potential for growth. Route 17K west of Route 300 and Route 207 between Routes 300 and 747 are two areas of particular note where new economic development activity is envisioned by the local communities. While there is certainly room in those corridors to expand the right-of-way to handle additional traffic demand, in some cases the level of investment needed to handle all of the projected traffic could alter community character. The communities should proactively determine if such an infrastructure improvement is consistent with long-term community visions. Metro-North and the Port Authority conducted Phase 1 of the West of Hudson Regional Transit Access Study which evaluated several transit options for access to Stewart International Airport. A direct bus alternative from Manhattan was one of the alternatives recommended with a bus only ramp off I-87 that would provide a more direct access to Stewart Airport from the south. This alternative could create an opportunity for cooperative planning among the concerned agencies to address both local and airport accessibility needs.

As mentioned above, the Newburgh Area Study included some additional components including a more focused look at potential streetscape design on Broadway, transit planning for the Newburgh area local service, an examination of potential streetscape redesign along the Rt 218 / Hudson St corridor in Cornwall-on-Hudson, and bicycle and pedestrian planning.

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MID-COUNTY AND WESTERN COUNTY PLANNING

In the Middletown area, the factors calling for study and planning include, as in the Newburgh area:

- Expanding commercial development especially in Wallkill along the NY Route 211 corridor
- Reconstruction of the Exit 122 Route 17 interchange and the ramps connecting Route 17 and Interstate 84
- Construction of a new regional hospital on East Main Street near Exit 122
- Completion of the direct connection of the Galleria Mall area with the Orange Plaza area commercial developments (underneath Route 17)

This project will examine the area overall in terms of transportation and land use, as well as specific transportation corridors and subject areas in greater detail. Aspects to be studied include:

- Impact of accelerating commercial and residential development in and adjacent to area
- Access to and from development along major roads and highways
- Truck/freight mobility issues
- Real estate market & development trends and responses to significant changes
- Multimodal transportation connectivity
- Local land use policies and regulations
- Potential impacts and/or opportunities related to things happening external to study area

REGULAR AND ONGOING PLANNING ACTIVITIES

The regular and recurring activities undertaken with UPWP funding may not always be as visible as the large scale planning projects described above, but they are vital to the operation of the transportation council. These include planning for and conducting meetings of the Policy Board and Planning Committee, preparing and administering the UPWP, structuring and managing planning studies, and ongoing staff responsibilities such as maintenance and improvement of the travel demand model and its software. Transit planning activities are another recurring and regular staff activity. Please see the current UPWP at the OCTC website for more detailed information on these activities.

CHAPTER 12 | FUNDING & FISCAL CONSTRAINT

This chapter describes the sources of funds for OCTC multimodal transportation programming and outlines estimates of future revenues and costs of carrying out programming to the year 2040. The primary sources of estimates are the OCTC Transportation Improvement Program (TIP) and estimates prepared by NYSDOT, MTA Metro North, NYS Thruway Authority, and Orange County.

Federal transportation law requires that regional transportation plans be fiscally constrained. That is, financial commitments to specific projects in the plan must be within reasonably expected resource levels. Extensions of current funding sources can be assumed, but creation of new funding sources (such as supplemental sales taxes) cannot be reasonably assumed. For the purposes of this plan, the OCTC revenue estimates are limited to:

- Extension of current categorical federal funding levels (as apportioned by MAP-21)
- Extension of current state funding programs and levels
- Continuation of County and municipal commitments to match Federal and State funding
- Proposed 2015-2019 MTA Metro-North Capital Program
- NYSTA multi-year capital programs

Assumptions are required regarding each of the individual funding sources. These are enumerated below. This overview begins with descriptions of the Federal funding sources, sources of state and local matches for Federal funding, and the processes by which these funds are apportioned and allocated. This is followed by a summary of short term funding related to the OCTC 2014-2018 TIP and upcoming 2017-2021 TIP and then a discussion about the long-term outlook.

SOURCE OF FUNDS

Federal Fund Sources

Federal funding for surface transportation derives from apportionments within periodic Federal legislation. Funds in various programs are apportioned by legislation to the various states; annual appropriations by Congress are necessary in order that the funds may be programmed and expended. Two agencies of the U.S. Department of Transportation are primarily responsible for carrying out surface transportation programs and overseeing the expenditure of Federal funds: the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). Funding related to highways, bridges, the interstate system, and related facilities and programs are distributed to states through FHWA processes. NYSDOT then allocates those funds, along with state funds from various sources, to its eleven regions. Funds related to all forms of passenger transit are distributed directly to designated recipients through FTA processes. For certain programs related to transit affecting non-metropolitan areas (that is, areas outside MPOs), NYSDOT oversees programming and expenditure of funds. For transit programs serving Orange County, there are only two FTA Designated Recipients: the Metropolitan Transportation Authority (MTA) and Orange County. In the case of MPOs within Transportation Management Areas (as with Orange, Dutchess and Ulster Counties), funding is initially allocated to the TMA; the MPOs within the TMA subsequently sub-allocate funds to Designated Recipients.

The political and fiscal underpinnings of the Federal transportation legislative and apportionment processes are complex and complicated. So too are the regulations and processes by which Federal transportation funding must be planned, programmed, obligated, and expended. Those underpinnings and processes are

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for the most part beyond the scope of this long range plan document. Nevertheless, a few important points deserve mention and highlighting:

- Beginning with the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and subsequent Federal surface transportation legislative acts, Congress has provided a certain percentage of overall transportation funding for metropolitan transportation planning. Originally 1%, SAFETEA increased the planning funding to 1.25%. The apportionment formula under MAP-21 has changed States now will get their total lump sum program apportionment, and a calculated multiplier will be applied thereafter to determine metropolitan planning amounts. These funds, split between FHWA and FTA based on the relative proportion of their funding programs within the legislation, are apportioned first to the states. The states then sub-allocate planning funds to support metropolitan transportation planning activities of MPOs and TMAs.
- Similarly, ISTEA and subsequent surface transportation legislation has required that a portion of funding be used for transportation ‘enhancements’. This covers a broad range of activities that include beautification, scenic or historic programs (including provision of tourist and welcome center facilities), establishment of transportation museums, and pedestrian and bicycle safety education and facilities. In MAP-21 Congress consolidate transportation enhancements, Safe Routes to School and recreational trails programs into the Transportation Alternatives Program. In New York, NYSDOT provides for enhancements using FHWA funds through a state-controlled competitive program – the Transportation Alternatives Program (TAP). Two percent of the total of all MAP-21 funding must be dedicated to TAP. For transit funding, the FTA requires that the TMA demonstrate that 1% of Section 5307 funds will be dedicated to enhancements.
- Congressional practice had included the ‘earmarking’ of funds for various transportation and related purposes. A large proportion of the funding apportioned under SAFETEA consisted of earmarked projects (up to 10% by some estimates reported by the Transportation Research Board). Projects funded through earmarks are in many cases planned and designed outside normal planning processes. Nevertheless, if they are to be carried out, all earmark projects must appear on an approved TIP and STIP. There are no earmarks in MAP-21.
- All Federal surface transportation funding is provided on a reimbursement basis. Implementing State, local, transit and other responsible agencies must first carry out the projects and activities using non-Federal revenues. Provided that projects and activities are carried out in the manner specified by Federal laws and regulations, the Federal agencies will then make reimbursements to the maximum level of Federal participation (in many cases 80%, though it can be higher or lower within certain programs).
- The discussions in this document describe ‘revenues’ as those funds which are obtained from the Federal agencies. Those funds (that is, Federal government revenues) of course derive from a number of sources, including the Highway Trust Fund, excise taxes, fuel taxes, and other taxes.

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Federal Highway Administration Funds

There are various funding programs under FHWA auspices. The core funding programs are:

Surface Transportation Program (STP)

STP is the most flexible of all transportation federal-aid programs, allowing for the widest array of projects. This includes construction, reconstruction, resurfacing, restoration, rehabilitation, and operational improvements for highways (including Interstate highways) and bridges (including Interstate bridges), including any project necessary to accommodate other transportation modes; mitigation of damage to wildlife, habitat, and ecosystems caused by any transportation project; capital cost of eligible transit projects; publicly-owned intra-city and intercity bus terminals and facilities; highway and transit safety improvements and hazard elimination; surface transportation planning; highway and transit research and planning and technology transfer activities; capital and operating costs for traffic monitoring, management, and control; fringe and corridor parking facilities; carpool and vanpool projects; bicycle and pedestrian facilities; transportation control measures; transportation enhancement activities; development of certain required management systems; and a variety of wetland mitigation efforts. Under MAP-21 States are required to obligate a portion of STP funds for bridges non on Federal-Aid highways (off system bridges).

National Highway Performance Program (NHPP)

The NHPP provides support for the condition and performance of the National Highway System (NHS) a 163,000 mile network of interconnected principal arterial routes that serves major population centers, international border crossings, ports, airports, public transportation facilities, and other inter-modal transportation facilities and major travel destinations. The NHS is intended to meet national defense requirements and serve both interstate and interregional travel. The designated NHS includes all Interstate System segments, all urban and rural principal arterials, and all strategic highways and strategic highway connectors. Federal funds provided for the NHPP may be used for a wide variety of projects on the NHS, including:

- Construction, reconstruction, resurfacing, restoration, and rehabilitation, operational improvements, construction of and operational improvements for a non-NHS highway, construction of a transit project eligible for assistance under the Federal Transit Act (that is, if the project is in an NHS corridor and in proximity to a fully access controlled NHS highway, if the project improves the level of service on the access controlled highway, and if the project is more cost-effective than improvements to the highway).
- Highway safety improvements, transportation planning, highway research and planning, technology transfer activities, start-up costs for traffic management and control, fringe and corridor parking facilities, carpool and vanpool projects, bicycle and pedestrian facilities, development of certain required management systems, publicly owned intra-city and intercity bus terminals, intelligent transportation system (ITS) capital improvements, and a variety of wetland and natural habitat mitigation efforts.

Congestion Mitigation / Air Quality (CMAQ)

The CMAQ Program provides funds to states for transportation programs and projects that are likely to contribute to the attainment and maintenance of national ozone, carbon monoxide, or particulate ambient air quality standards. Examples of such projects are: programs for improved transit, construction of lanes for use by buses or HOVs, employer-based transportation management plans, traffic flow improvement

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programs, fringe and corridor parking facilities, carpool and vanpool programs, flexible work schedule programs, alternative fuels programs, and non-motorized transportation facilities.

Federal Transit Administration Funds

There are several funding programs administered by the FTA. It is important to remember that transit funding is provided directly to Designated Recipients, which may operate public transit services or which may pass through funding to agencies and companies that operate public transit services. The FTA core programs include:

Section 5307

This program makes Federal resources available to urbanized areas and to States for transit capital and operating assistance in urbanized areas and for transportation related planning. All preventive maintenance and some Americans with Disabilities Act complementary paratransit service costs are considered capital costs. Section 5307 capital assistance is available to MTA Metro North and (via Orange County) to bus operators providing service in and through the urbanized portions of the County. The Section 5307 eligible areas of the County include the City and Town of Newburgh, the City of Middletown, and the Towns of Cornwall, New Windsor, Highlands, Blooming Grove, Monroe, Woodbury, Wallkill, Mt. Hope, and Wawayanda. The Newburgh urbanized area, because it is connected to the Poughkeepsie and Kingston urbanized area, is considered a 'large urban area' and the Middletown urbanized area is considered a 'small urban area'.

As mentioned above, with the establishment of the Mid-Hudson Valley Transportation Management Area as a result of the 2000 Census, Section 5307 funds are first allocated to the large urban area for sub-allocation by the three MPOs in this area. The method used to allocate funds to the TMA is based upon the population, population density and transit service statistics of the urbanized areas in the TMA. The three MPOs in the TMA must then work cooperatively, with the assistance of the NYSDOT Passenger Transit Division, to sub-allocate these funds to the Designated Recipients. The MPOs in the Mid-Hudson Valley TMA have agreed to a method of distribution which includes the retention of a portion of the funding to projects as may be agreed by the MPOs. As of the 2010 Census, the Poughkeepsie-Newburgh Urban Area extends along Greenwood Lake into New Jersey, which has required development of funding and cooperative planning agreements between the states and also between the respective MPOs: OCTC and the North Jersey Transportation Planning Authority.

Section 5310- (Elderly and Individuals with Disabilities Program)

This program provides formula funding to States for the purpose of assisting private nonprofit groups in meeting the transportation needs of the elderly and persons with disabilities when the transportation service provided is unavailable, insufficient, or inappropriate to meeting these needs. See the OCTC Coordinated Public Transit Human Services Transportation Plan for more information on this funding source and the changes brought about by MAP-21.

Section 5311

This program provides formula funding to states for the purpose of supporting public transportation in areas with an urban population of less than 50,000. State apportionments are based on each State's non-urbanized population. Funding may be used for capital, operating, State administration, and project administration expenses. Each state prepares an annual program of projects, which must provide for fair and equitable distribution of funds within the states, including Indian reservations, and must provide for

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maximum feasible coordination with transportation services assisted by other Federal sources. Section 5311 funds are allocated to Orange County by NYSDOT which is the designated recipient for this program. The State then distributes the funding to Orange County for local administration. Section 5307 funds can be transferred to 5311 projects and vice versa. Both capital programs allow for 80% Federal funding, 10% State funding, and 10% local funding. Section 5311 capital assistance is available for the non-urbanized portions of the County which includes Towns of Deerpark, Greenville, Minisink, Warwick, Tuxedo, Goshen, Chester, Crawford, Montgomery, and Hamptonburgh; the area also includes the City of Port Jervis because its contiguous urban area population is less than the 50,000 population MPO threshold.

Section 5339

This program provides capital funding to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities. Designated recipients and state that operate or allocate funding to fixed-route bus operators are eligible. Public agencies or private nonprofit organizations engage in public transportation, including those providing services open to a segment of the general public, as defined by age, disability, or low income are also eligible.

Capital funding for transit can also be made available through the Surface Transportation Program (STP) and the Congestion Mitigation / Air Quality (CMAQ) program.

Operating Assistance: Most bus operations in Orange County have been eligible in the past for Federal Sections 5311 and/or 5307 Operating Assistance. The particular funding source for which each is eligible is a factor of its identification as being in a rural portion of the County or one of the two urbanized areas of the County. Only the rural portions of Orange County (those eligible for 5311 Federal Operating Assistance) receive an annual allocation for operating assistance through the NYS Dept. of Transportation. Bus operations in the urbanized areas of the County may or may not be eligible for Federal Operating Assistance depending on their location and the amounts made available by Congressional appropriation. Federal operating assistance was supposed to be phased out in the Poughkeepsie-Newburgh large urban area. However, Congress continues to appropriate amounts for operating assistance. The Middletown small urban will remain eligible to receive Federal funds which can be utilized for either capital or operating assistance needs.

The operating costs of the public transportation systems in Orange County (aside from MTA Metro North) are partially funded through fare box revenues and available State and Federal capital and operating assistance. The local match required by the NY Statewide Mass Transportation Operating Assistance (STOA) Program is provided by the operators themselves. The local match required for Federal Transit Administration funding is provided by local operators, county and municipal budgets, and from the NY State Dedicated Fund for transit. All operating losses incurred by the local operators above and beyond the available State and Federal operating assistance are borne by the operators. Operating funds for demonstration purposes are available through the Federal Congestion Mitigation and Air Quality (CMAQ) funding program. CMAQ funds are limited to three years.

State Dedicated Funds (Highways and Transit)

There are a number of funding programs and fund sources which support transportation system operations, maintenance, and capital investment. These include direct funding for and by NYSDOT as well as other special funding sources available to the State's transportation operating authorities, some of which have facilities and operations serving Orange County. These include the Metropolitan Transportation Authority,

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the New York State Thruway Authority, and the New York State Bridge Authority. The various fund sources are briefly described in the following:

Highway State Dedicated Fund (SDF)

These are 100% State funds for 100% State funded highway and bridge projects on the state highway system and for matching federal aid for federally aided projects on the state highway system.

Transit State Dedicated Fund (SDF) Program

The Governor's multi-year Transportation Plan includes 100% State funds to address capital needs - for systems other than the Metropolitan Transportation Authority (MTA) - that exceed available federal and local resources. Local Transit sponsors and designated recipients of funding from the Federal Transit Administration (FTA) - other than the MTA (Non-MTA) are eligible recipients. Funding from this program is provided from the State's Dedicated Mass Transportation Trust Fund within the Dedicated Highway and Bridge Fund. Annually, NYSDOT develops a program based upon the transit systems' identified unfunded needs. Eligible mass transportation capital projects identified in the needs analysis include: replacement buses, facility/garage modernization, transit-related equipment (bus washers, service vehicles), and other federally-eligible projects. Transit SDF program funding may not supplant available federal, State and local funding.

Special Purpose New York State Bond Acts

The \$2.9 billion Rebuild and Renew New York Transportation Bond Act of 2005 provided funding for specific highway and bridge projects identified in the bond issue. Funding is also available for New York's transit systems, freight and passenger rail network, airports, canals, and port facilities.

Marchiselli Program

Marchiselli funding may be made available to offset a portion of the non-federal share of project costs. If approved, the final funding for projects that meet the eligibility requirements for the Marchiselli program is 80% federal, 15% Marchiselli, and 5% local. Marchiselli eligible work includes roadways, bridges, sidewalks, shared use paths, pedestrian bridges, and bikeways that are located within an existing local highway right-of-way. Due to the high demand for limited funds, Marchiselli aid may not be available for every project phase. Generally, annual Marchiselli funds are allocated first to projects in the construction phase, then to other projects in earlier phases.

Consolidated Highway Improvement Program (CHIPS)

The Consolidated Local Street and Highway Improvement Program (CHIPS) was established by the State Legislature in 1982. The applicable rules for the program are contained in Section 10-c of the State Highway Law. Apportionments to municipalities are calculated annually by NYSDOT according to formulas specified in this section of the Law. The objective of CHIPS is to assist localities in financing the construction, reconstruction, or improvement of local highways, bridges, highway-railroad crossings, and/or other local facilities in accordance with Section 4 of Chapter 84 of the Laws of 2002.

NYS Thruway Authority

The Thruway Authority is a public corporation organized and existing pursuant to Article 2, Title 9 of the New York State Public Authorities Law for the purpose of financing, constructing, reconstructing, improving, developing, maintaining and operating a highway system. Each year, the Authority Board approves the Authority/Canal Corporation budget for the ensuing fiscal year. This financial blueprint sets forth the sources and uses of funds necessary for the Authority's operations, Capital Program, mandated

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projects and debt service requirements. The financing components are primarily Thruway revenues, bond proceeds, Federal Aid and Other funds, listed in the Annual Reports. Annual Reports and additional financial information can be found the Thruway Authority's web site - www.thruway.ny.gov - under Financial Information (in the "About" category).

Metropolitan Transportation Authority (MTA)

Metro-North Railroad, a division of the MTA, is a public benefit corporation. Metro-North's direct revenues are primarily from passenger collections (ticket sales), rents, and concessions. The Railroad also receives subsidies as part of the MTA operating budget to support its operations. The proposed 2015-2019 Capital Program is not yet funded.

The MTA's Capital Program, which invests in renewing MTA's infrastructure and expanding our transportation network for the future, is integral to MTA's ability to deliver services. The proposed 2015-2019 Capital Program was submitted to the MTA Board in September 2014 and submitted to the Capital Program Review Board (CPRB). That version of the proposed program was vetoed by the CPRB. The MTA is preparing to submit a revised proposal first to its Board for approval, and then to the CPRB. For more information, see www.mta.info/capital.

Local Fund Sources

Local funding for the transportation system includes County, Village, City and Town revenues from various sources, including property taxation, excise taxes, and bonds. These revenues are utilized for first instance funding of OCTC programmed local projects which will in part be reimbursed by Federal and State funds. There is no assured means by which to ascertain local government commitments or projections. However, experience has shown that local resources will be provided, given the limited amount of Federal funding available for local projects combined with the low level of local match required (customarily 10% for transit, 5% for highway, or 20% for bridges or non-highway). Therefore, especially given the reduced level of Federal and State revenues expected to be available, adequate local resources are assumed to be available for match requirements of the 2017-21 TIP and beyond.

SHORT TERM FISCAL OUTLOOK – OCTC 2014-18 AND 2017-21 TIP UPDATE

Transportation Improvement Program

The Orange County Transportation Council is required to prepare and maintain a capital investment planning program showing how all available Federal Highway and Federal Transit funding will be utilized. This capital investment plan is called the Transportation Improvement Program or TIP. Preparation of the TIP is a critical task because it is in essence the OCTC short range plan. This task is supported to a degree by the UPWP, but even more so through individual member agency participation, especially through the work of staff at the NYSDOT regional office. The OCTC TIP covers a five year period and is updated every two years. The most current TIP covers the period of Federal Fiscal Years from 2014 through 2018.

The TIP is necessarily the most explicit description of the short term plan of projects for OCTC, prepared in consistency with the long range plan. Normally a new TIP is developed every two years. The long range plan will be updated if substantial and significant projects are to be programmed in the TIP, which are not described in the scope of this plan.

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The TIP is a multi-modal capital program that assigns Federal funds to highway, bridge, bikeway, pedestrian, transit, travel demand management and other projects that will be undertaken in the five year period following adoption. Individual project listings identify the proposed schedule, scope, costs, and federal, state and local fund source assignment. Both federally and non-federally funded projects are shown to provide a comprehensive view of the transportation capital and operating projects in the region. Inclusion of a project in the TIP allows environmental study, project development, and construction to proceed according to the schedule presented in the detailed project listing.

The TIP is a federally required product of the transportation planning process and is developed by the Metropolitan Planning Organization in cooperation with State and local officials, regional and local transit operators, and other affected transportation and regional planning and implementing agencies. The program indicates the priority of proposed projects for implementation during the program period, and provides realistic estimates of total project costs versus the anticipated available resources (i.e., shows realistic fiscal constraints).

[illegible]

The TIP document is comprised of project listings, summary narratives, tables, and charts. The OCTC TIP documents also now include maps allowing readers to visualize the location of programmed projects; an example of which is shown here. There are five sets of project listings in the OCTC TIP, which are separated by agency and geographic area. The Orange County project listings include only those highway and transit projects contained entirely within the planning boundaries of the OCTC (all of Orange County).

The Multi-County project list includes those which are programmed by NYSDOT to be undertaken throughout Region 8 and for practical purposes cannot be easily described, programmed, or carried out in a strict county-by-county manner. The County and Multi-County project listings include only NYSDOT projects, local projects carried out with Federal Aid administered by NYSDOT, and projects administered by Orange County using matched FTA funding. Projects programmed and to be implemented by MTA Metro North, the NYS Thruway Authority, and the NYS Bridge Authority make up the other TIP project listings (some of which may include projects identified as multi-county in nature or specific to Orange County).

As of the last TIP update, the OCTC TIP is published in a digital-only format and made available over the Internet; paper copies of the TIP or sections of the TIP may be provided by request.

Initial environmental review for projects to be carried out through the Transportation Improvement Program is conducted during the preliminary design phase. Full environmental review is carried out during the design and preliminary engineering phases. Design reports created prior to Federal agency approval and project implementation identify any environmental mitigation which would be required in carrying out projects. Required NEPA reviews would customarily be completed by the overseeing Federal agency (or by NYSDOT if agreed to by FHWA for FHWA funded projects) during design report & approval. New York State Environmental Quality Review (SEQR) processes are carried out by the Lead Agency in coordination as necessary with other Involved Agencies. In consultation for the 2011 long range plan update, the Army

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Corps of Engineers emphasized the importance of coordinating with them during project implementation, which must be undertaken in accordance with Federal (and State) wetlands laws and regulations.

The TIP development process includes four major activities 1) determining reasonably expected Federal and State funding, 2) updating the costs and schedules of existing TIP projects, 3) soliciting new projects for the Congestion Mitigation Air Quality (CMAQ) program and the Surface Transportation Program-Urban (STP Urban) program if funding is available beyond already programmed projects, and 4) identifying new transit projects for local and regional transit agencies administered by Orange County. This information is considered by staff and the OCTC Planning Committee in order to prepare a new five year program, for review and adoption by the OCTC Policy Board. Following local adoption, the TIPs of each MPO in the state, together with the transportation programs of non-metropolitan areas of the state prepared by NYSDOT, are combined into an overall New York State Transportation Improvement Program or STIP. The STIP is submitted to the Federal Highway Administration and the Federal Transit Administration for their approval. The New York STIP is a four-year program and includes only four of the five years of the OCTC TIP.

NYSDOT Region 8 staff provides the MPO with the ability to implement specific FHWA-funded projects listed in the TIP by the work it does in translating the projects from the TIP to the NYSDOT Capital Program, and helping project sponsors with implementation. TIP development and administration is coordinated as necessary for the purpose of air quality conformity. The TIP and STIP are amended as necessary during the course of carrying out the program and to address changing project circumstances, funding adjustments and exigencies. The TIP is available at www.orangecountygov.com/planning/octc.

A total of approximately \$333M is programmed in the 2014-2018 TIP for transportation projects in Orange County. This includes approximately \$224M in Federal funding and \$109M in state and local funding. Of this total, \$79M supports bus transit and \$254M supports highway projects. MTA-Metro-North Railroad anticipates approximately \$58M in projects entirely or partially in Orange County.

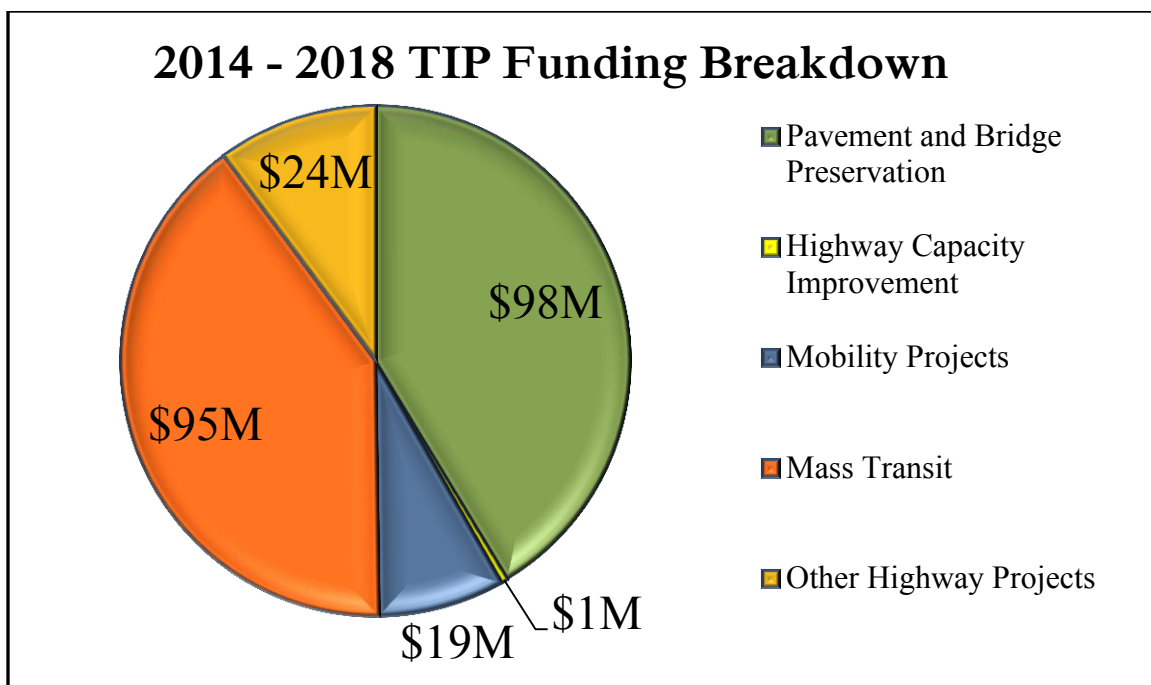
Overall, the 2014-2018 TIP emphasizes the preservation of the existing transportation system. To that end, approximately \$98M supports pavement and bridge preservation projects, \$1M is dedicated to highway capacity improvement projects, \$24M goes to other highway projects such as safety and intersection improvements, and \$19M goes to mobility projects. Funding for mass transit (other than Metro-North Railroad) amounts to \$95M, which supports maintenance and operations as well as enhancements and upgrades. The 2014-2018 TIP includes an additional \$418 M in multi-county, system-wide highway projects that will partially benefit Orange County. These multi-county projects support cyclical maintenance projects across NYSDOT-Region 8 and include traffic signal replacements, highway sign improvements, guiderail maintenance, and pavement marking initiatives.

As previously mentioned, the OCTC TIP also includes project listings from three regional authorities: MTA/Metro-North Railroad, NYS Bridge Authority, and NYS Thruway Authority. Like the NYSDOT Multi-County projects, these projects often provide an indirect benefit to Orange County; though there are some projects specific to or completely within Orange County. MTA/Metro-North Railroad expects to program approximately \$58M in system-wide projects which will benefit the County. In addition over \$114M is programmed by the NYS Bridge Authority for projects partially with the County, and about \$35M is programmed by the Thruway Authority for projects in Orange County.

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A number of projects were reauthorized by OCTC in the 2011-2015 TIP. These include projects funded under Congestion Mitigation and Air Quality improvement program (CMAQ), Surface Transportation Program (STP) and Highway Bridge Rehabilitation and Replacement (HBRR) program. There are also twelve projects funded wholly or partially by SAFETEA High Priority Program (HPP) funds. These are carry-overs from both the 2008-2012 and 2011-2015 TIPs. As previously mentioned, there were no new highway projects added to the TIP during the 2014-2018 TIP update due to lack of available highway funding.

Due to an expectation of flat Federal funding levels going forward and unless some Federal action occurs which would include new revenue, the development of 2017-2021 TIP will be based on essentially the same estimates of reasonably expected Federal funding as used in the 2014-2018 TIP. Because the funding estimates are flat it is unlikely that many new projects will be added in the 2017-2021 TIP.



POST-TIP

Beyond the period of the 2017-2021 TIP update, there is an intermediate term for which there are agency and/or OCTC plans which point to a small number of specific, identifiable projects. These projects are aside from regular and continuing capital, maintenance and operating needs in the various program areas. Different agencies have different intermediate term planning horizons.

Funding for any projects identified for this period has not been committed and, in fact, the complexion and scale of Federal surface transportation funding is not known beyond a very short time frame. There is a hope of continued funding for routine maintenance, operations, and capital investment which will be required to achieve and maintain all systems in a state of good repair, however there are no guarantees. Projects which may be programmed or undertaken during that long range period remain to be explicitly identified through current and future OCTC and member agency planning and analyses.

To the extent that those changes would be beyond the scope of what is discussed in this document, the OCTC Long Range Transportation Plan would need to be amended to reflect those changes. This long range plan document has a “horizon” out to 2040. However, in practical terms, very little can be said about what the County’s transportation needs will be three decades hence. Provided that the cost of petroleum-based fuels and/or their replacement alternatives can retain the same relative proportion of disposable income as they do today, and no catastrophic changes on a national or global scale occur, it seems reasonable to assume the populace would likely continue to expect a transportation system in 2040 that supports a high degree of personal freedom using petroleum-based single and multiple occupant vehicles on an extensive surface road network. Given the increasing use of petroleum-based fuels by a number of rapidly developing economies in Asia and elsewhere, projections that global supply will not be able to meet the increased demand, and the present weak political and economic will to rapidly and greatly expand our national capacity to use alternative fuels or technologies for our trucks, SUV’s and automobiles, it also seems reasonable to assume that there is fair potential that the future may be one where fuel costs are much higher in relative terms than they are today. In the end – looking very long term – to a great degree, the economic, political, and technological factors, decisions and initiatives which will affect that future are beyond the capacity of this plan to review, and beyond the capacity of this county to influence.

A critical factor in looking ahead, even in the short term, is the present indebtedness of our nation (and state). The scale of indebtedness raises serious questions about the ability of current and future governments to fund investments in operation, maintenance and improvement of our transportation systems. It may be that this indebtedness will be managed by our political and financial systems so that it will have no negative impact on transportation funding. It might be that investment in transportation systems could even increase. On the other hand, the financial and fiscal situations could lead to decreasing real levels of investment in transportation. What the future of federal finance holds is necessarily uncertain and for the most part outside control from a county perspective. Nevertheless, the potential for increasing fuel costs (or great volatility in fuel cost changes) and questions about future ability to pay for operation, maintenance and improvement, argue for promotion of more sustainable transportation systems. Given these circumstances, OCTC member agencies are faced with the fact that preservation of the existing system must take priority and that there may be no or extremely limited funds for anything else. Therefore, at the present time the cost of operations and maintenance are estimated to consume all of the available funding beyond the current TIP. In fact, agencies are faced with the potential future need for disinvesting in a portion of the existing system and must consider if and how to plan for this potential.

Given the lack of a realistic, long-term federal transportation funding plan, the extreme uncertainties regarding government fiscal outlooks at all levels, and overall uncertainty about economic conditions, attempting to estimate even rough amounts of future funding is of questionable value. No matter what numbers result from the estimation, in the present environment, they will almost certainly be wrong. Nevertheless, in part to satisfy Federal planning requirements, the estimates from the 2011 plan have been updated. To determine potentially available highway resources over the plan period, funds were calculated by using the Annual Allocation Table from NYSDOT Main Office, which established NYSDOT Region 8 program levels by federal highway fund source and by year. These estimates were then adjusted to reflect the OCTC metropolitan area’s historic percentages of NYSDOT Region 8 federal-aid resources and then refined by NYSDOT Region 8 itself. This assumes that the metropolitan area’s share of the state allocations for each of these fund sources will continue at current levels into the future. Separate estimates have been provided by MTA, Thruway and Transit Orange.

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Category	MEDIUM & LONG TERM FISCAL OUTLOOK POST 2017-21 TIP PLAN PERIOD 2022-2040				
	Projected Needs		Projected Resources		Surplus or (Shortfall)
	Base Year	For Period	Base Year	For Period	For Period
State Highways – Capacity / Major Reconstruction	\$10	\$262	\$0	\$143	(\$119)
State Highways – Other	\$2	\$56	\$1	\$19	(\$37)
State Highways – Pavement	\$14	\$375	\$7	\$127	(\$248)
State Bridges	\$23	\$614	\$12	\$228	(\$386)
State Maintenance and Operations	\$18	\$461	\$2	\$41	(\$420)
State Transit / TDM	\$6	\$157	\$3	\$57	(\$100)
(State) Local Projects – Capital Projects eligible for Federal Aid	\$22	\$573	\$7	\$255	(\$318)
(State) Local Projects – Maintenance eligible for Federal Aid	\$1	\$32	\$0	\$0	(\$32)
NYS Thruway – Capital Investment	\$12	\$385	\$12	\$385	\$0
NYS Thruway – Maintenance	\$6	\$200	\$6	\$200	\$0
MTA Metro-North – Sec 5309 Capital Investment	n/a	\$1,067	n/a	\$1,067	\$0
MTA Metro-North – State of Good Repair/Normal Replacement	\$17	\$450	n/a	\$450	\$0
Transit Orange – Capital Investment	\$5	\$131	\$4	\$105	(\$26)
Transit Orange – Prev. Maint. / Operating Asst.	\$12	\$315	\$10	\$219	(\$96)
TOTAL	\$149	\$5,078	\$63.8	\$3,295	(\$1,783)

Notes
 2022 - 2040 = 19 years, inclusive
 All values in \$ Millions
 Base Year estimates inflated by 2% annually to arrive at YOE expenditure totals (no compounding)
 Some totals may vary due to rounding

Local Transit Financing

For the purposes of this plan, Federal transit capital and operating/preventive maintenance funding for Orange County is projected to continue at current level for the period of this plan. How these funds, along with carryover 5307 funds, will be allocated among capital and operating/preventive maintenance projects has yet to be determined. Local policy is to continue routine replacement of transit facilities and vehicles to at least maintain service at current levels and equipment in a state of good repair. OCTC works closely with transit operators to identify transit needs and funding estimates. Orange County is the local FTA Designated Recipient, which is administered within the County Planning Department. (MTA, which provides train service in the county, is also a Designated Recipient.)

The Metropolitan Transportation Authority (MTA) is also a designated recipient of Section 5307 funds in the Urbanized Area. The MTA Metro-North Railroad operates commuter train service in Orange County through a contract with New Jersey Transit. The MTA utilizes Section 5307 and other funds to make capital improvements on the Port Jervis Line. As a subsidiary of the Metropolitan Transportation Authority (MTA), Metro-North Railroad projects are included in the MTA's Capital Program. MTA's proposed 2015-2019 Capital Program is not yet approved. It includes projects to improve Metro-North service, including the purchase of new rolling stock, signal and power improvements to meet Positive Train Control

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requirements, the continued rehabilitation of stations, and track maintenance. Metro-North is developing system expansion projects such as providing passing sidings and construction of a midpoint yard on the Port Jervis Line that will be financed as part of subsequent Capital Programs. The MTA completed the process of developing a 20-Year Capital Needs Assessment (2015-2034), which identified \$11.8 billion in system-wide capital needs for Metro-North. These needs are required to maintain a state of good repair and support projects such as replacing rolling stock, maintaining track, and replacing bridges, as well as providing funds for expansion improvements.

Fiscal Constraint

The Orange County Transportation Council (OCTC) is one of four MPOs in NYSDOT Region 8 which also includes the NYMTC Mid-Hudson South Transportation Coordinating Committee (MHSTCC), the Poughkeepsie-Dutchess County Transportation Council (PDCTC) and the Ulster County Transportation Council (UCTC). MHSTCC is one of three TCC's – essentially sub-MPOs – of the 10 county NYMTC MPO areas. NYSDOT Region 8 also includes non-metropolitan Columbia County, which has a Transportation Advisory Committee. The MPOs in Region 8 are grouped into two Transportation Management Areas (TMA): the Mid-Hudson area which encompasses the MPO areas of OCTC, PDCTC and UCTC and the New York Metro TMA encompassing all of the area overseen by the New York Metropolitan Transportation Council.

The multi-MPO and one rural county structure of Region 8 means that no one MPO has a direct allocation of federal funds to fiscally constrain. Fiscal constraint rests at the Region 8 level. Staff of the MPOs work with Region 8 program management staff to keep the four TIPs constrained. The four MPOs update their TIPs normally on the same biennial cycle. Region 8 provides the MPOs with current financial and schedule data for existing projects and estimates of funds available for programming over the next TIP period. This begins the cyclical TIP development processes in a constrained manner. Due to the fact that the amount of state first instance funding for federally-aided local highway projects is capped by the New York State Legislature, the historical OCTC experience has been that the estimated cost of proposed local projects for addition to the TIP has always exceeded the non-local (Federal & State) funding available. Federally-aided local highway projects on the TIP are already fiscally constrained to the Federal and State funds not already programmed in the TIP period. Available funds are allocated based on need, priority and other criteria, primarily through the biennial TIP development processes.

To keep the TIP fiscally-constrained as amendments are processed, offsets are determined for cost increases and schedule changes. According to the operating procedures of all four MPOs in Region 8, the search for an offset begins with the agency responsible for the project amendment. If no agency derived offset is available at that level, the next place to look for an offset is within the overall program with the county, then within the entire MPO (as is the case with NYMTC which comprises 10 counties (including the 5 boroughs of NY City), then within all of NYSDOT Region 8. The Region 8 program as adopted, and as shown in the State Transportation Improvement Program (STIP), is fiscally constrained.

CHAPTER 13 | GOALS, OBJECTIVES, & RECOMMENDATIONS

This chapter presents the goals and objectives of the Transportation Council and presents recommendations for working to achieve them through policies, strategies, planning or other actions. These recommendations for the most part do not describe specific infrastructure projects or system operation and maintenance activities, though they do describe the considerations involved in undertaking such projects. The aspirations and actions contained in this chapter are as much a part of the OCTC Long Range Transportation Plan as other more project-oriented or funding-oriented elsewhere in this document. *[Please note that while the statements of goals and objectives and of the various recommendations have been grouped in an attempt to relate to certain topics, there is some overlap between topic area and also some repetition of ideas.]*

A. Build adequate, safe, balanced, and efficient multimodal transportation for motorized and non-motorized users at reasonable cost to the people of Orange County and New York State.

Objectives:

1. Preserve, rebuild and maintain existing and future transportation infrastructure so that it will meet applicable Federal, State, County and municipal standards.
2. Provide adequate transport system capacity with no highway segments operating above a volume to capacity ratio of 0.9.; preserve existing capacity on corridors.
3. Maximize transport system safety through improved design, construction and operations.
4. Investigate all high accident locations over a five-year period and take corrective actions as possible.
5. Continue to develop a transport system that balances the most cost-effective modes.
6. Provide for the travel needs of mobility-limited persons (elderly, disabled, economically disadvantaged) and meet ADA requirements.

Recommended Actions:

1. Continue to develop and implement the TMA Congestion Management Process.
2. Participate in the NYSMPO Safety Working Group and related coordination with other agencies.
3. Coordinate with and assist in the activities of the Orange County Traffic Safety Board.
4. Gather, analyze and post information on the OCTC website regarding safety and accident data.
5. Update the Coordinated Human Services Transportation Plan as necessary in cooperation with all human service agencies and human service transportation providers.
6. Review and update as necessary County ADA paratransit policies; make service improvements as warranted.
7. Develop roadway safety monitoring system.
8. Program projects to rehabilitate and maintain the existing transportation infrastructure.
9. Working with infrastructure owners, develop an asset management system.
10. Encourage municipalities to adopt access management laws/regulations.

B. Implement a multimodal transportation system that improves accessibility, allows reasonable choice of mode, and provides an adequate level of service for future travel and freight demands.

Objectives:

1. Promote and provide for the development and integration of all travel modes including highway, transit, pedestrian, and bicycle travel needs.

2. Where necessary and consistent with the County Comprehensive Plan, and only after system maintenance and preservation has been funded, reconstruct and widen major highway corridors, and construct service roads for access in order to optimize system capacity and safety.
3. Develop travel alternatives (rail, light rail, bus rapid transit, ferries, ridesharing (including van and carpooling), buses, pedestrian and bicycle facilities, etc.) to the single-occupant automobile in growth and commuter corridors to move more people in the peak hours and maximize capacity.
4. Establish criteria for mode split for different types of trips (e.g., to New York City, within the County, in critical corridors).
5. Develop and aggressively promote transportation-demand and systems-management techniques.
6. Link existing long distance commuter services with local communities.
7. Provide adequate freight facilities within the County.
8. Promote improved collaboration between municipalities in developing and implementing non-motorized transportation alternatives and infrastructure.

Recommended Actions:

1. Prepare a new non-motorized transportation plan (bicycle and pedestrian plan).
2. Develop an ongoing UPWP activity directed at assessing and planning for freight movements and infrastructure in and through the county; begin this effort with a detailed assessment of freight as described in Chapter 6 of this plan document.
3. Continue working with NYSDOT, transit operators, FTA, MTA-MetroNorth and others to maintain and improve TDM programs.
4. Include multi-modal analysis in all OCTC sponsored transportation studies.
5. Develop programming criteria for TIP development that require coordination of multi-modal solutions.
6. Develop planning and policy recommendations to implement Complete Streets initiatives where required or desirable.

C. Foster a healthy and vital economy adequately supported for continued smart growth by the transportation system.

Objectives:

1. Retain existing businesses and foster continued economic development in appropriate areas based on the “priority growth area” concepts of the Orange County Comprehensive Plan.
2. Develop infrastructure necessary to service Stewart International Airport.
3. Provide convenient access to employment centers for all people, including economically disadvantaged.
4. Minimize the displacement of people and businesses during the construction of new or expanded transportation facilities.
5. Provide for equal opportunity in construction and other transportation programs.

CHAPTER 13 | GOALS, OBJECTIVES, & RECOMMENDATIONS

Recommended Actions:

1. Coordinate transportation planning activities related to Stewart International Airport with member agencies (NYSDOT, the Port Authority of New York & New Jersey, MTA Metro-North, local governments) and others.
2. Complete mid and western County Transportation and Land Use Study.
3. Harmonize local land use decisions with a transportation system that can be economically provided.

D. Create a balance of smart land-use development and adequate transportation infrastructure through comprehensive planning and growth management throughout the County.

Objectives:

1. Promote consistency between transportation improvements and State and local planned growth and economic development patterns.
2. Local governments develop and adopt new or revised master plans that will encourage transit, and pedestrian/bicycle-friendly developments in and around existing cities, villages and transportation corridors where adequate transportation, sewer and water services are available or planned.
3. Encourage inter-governmental cooperation and legislative initiatives needed to coordinate land-use and transportation infrastructure.
4. Local governments use land-use and zoning control to foster comprehensive planning and growth-management techniques: performance zoning (developer incentives), phase development, overlay districts, areas of critical planning and negotiated development agreements, etc.
5. Design and implement fiscal devices which will foster development patterns conducive to and consistent with transportation policy goals.

Recommended Actions:

1. Continue to implement and improve the transportation/land use planning coordination and development review functions through OCTC support staffing at the Orange County Planning Department, and related coordination with other agencies including the NYS Department of Transportation and the Orange County Department of Public Works.
2. Complete a Mid and western County Transportation and Land Use Study.
3. Continue implementation of the Southeast Orange Transportation and Land Use Study; Update the analyses and recommendations of the AKRF study based on new data/information; Consolidate and synthesize the land use and planning recommendations of the AKRF study with the findings and recommendations of the county-supported RPA Visioning initiative.
4. Examine the transportation & land use characteristics of the OCTC planning areas which are outside the generalized urban area boundary.
5. Through the separate SEOC and Mid-County area initiatives or through a separate, corridor focused planning initiative, assess the land use and off-facility transportation influences which may be expected from the conversion of NY Route 17 into an Interstate Highway.
6. Develop educational programs and materials for local officials on transportation and land use.
7. Incorporate the Smart Growth Infrastructure Policy Act in planning and decision-making as it may be required or desirable.

CHAPTER 13 | GOALS, OBJECTIVES, & RECOMMENDATIONS

E. Prioritize energy conservation, environmental protection, and enhancement.

Objectives:

1. Develop and promote travel alternatives to single-auto occupancy travel such as ridesharing (including van and car-pooling), transit, bicycling and walking to reduce traffic congestion through transportation-demand and systems-management techniques.
2. Improve air quality through promotion and development of transit and ridesharing alternatives to single-occupant automobile travel.
3. Encourage the development and use of alternative vehicle types (i.e. those that require alternative fuels or vehicles that operate on cleaner fuels with improved emission standards).
4. Reconstruct and, if necessary and consistent with the County Comprehensive Plan, widen existing major transportation corridors rather than creating new ones to accommodate increasing travel demand while maximizing open spaces, minimizing requirements for new land for transportation, and encouraging clustered denser development that can be economically served by transit, bicycle, and pedestrian modes.
5. Minimize adverse environmental impacts (air, water, land and noise pollution) from transportation system and local land use development. Improve air quality to meet EPA goals.
6. Protect and preserve environmentally sensitive and agricultural lands.
7. Protect and promote scenic qualities, enhance man-made and natural environments throughout the County.
8. Encourage fleet turnover to increase percent of vehicles that are fuel efficient and low emitters of pollutants.

Recommended Actions:

1. Evaluate creation of a county level official map and assist in the creation of municipal official maps as a means of protecting future transportation rights-of-way.
2. Purchase only low emission transit vehicles.
3. Continue efforts to convert traffic signal lamps to light emitting diodes (LEDs).
4. Convert / retrofit school buses.
5. Incorporate examination of potential environmental impacts during transportation planning to the extent possible.

F. Create and maintain a cost effective, integrated, and secure multimodal transportation system for motorized and non-motorized users and obtain adequate financial resources to support it.

Objectives:

1. Cost-effective allocation of funds in order to rebuild and maintain the County's transportation infrastructure.
2. Private sector initiatives, public-private partnerships, and develop innovative financing mechanisms to fund transportation needs.
3. Integration of available transit services at multimodal transportation centers.
4. Incorporate examinations and actions to improve security in planning and funding of the transportation system.

CHAPTER 13 | GOALS, OBJECTIVES, & RECOMMENDATIONS

5. Enhance the relevancy and effectiveness of the Orange County Transportation Council, its staff and programs.
6. Major limited access corridors actively managed using advanced traffic management system coordinated from Region 8 Traffic Management Center (TMC).
7. Transit operators implement transit ITS to provide vehicle and stop security, optimize operations and inter-operator coordination, and coordinate with Region 8 TMC.

Recommended Actions:

1. Expend at least the required 1% of FTA funding on security measures.
2. Assist bus operators in the completion of bus storage and maintenance facilities in a manner that will improve transit system security.
3. Develop a process to dedicate a portion of UPWP allocations to planning initiatives of municipalities and groups of municipalities.
4. Through a UPWP funded project, review the overall funding of operation and maintenance of transportation systems in Orange County; identify practical recommendations to improve the cost effectiveness of transportation spending and seek to increase overall funding.
5. Assess the ongoing Pavement Management Program; improve as necessary.
6. Undertake an assessment of the OCTC Travel Demand Model, possibly through the Travel Model Improvement Program.
7. Continue to improve the OCTC internet presence.
8. Undertake an assessment of other local data gathering and analytical processes.
9. Develop and implement an OCTC records management program.
10. Develop a system to coordinate NYSDOT and County highway work permit processes and local SEQR processes to ensure adequate transportation system mitigation is obtained from developers and opportunities for public/private partnerships are identified.

NON-MOTORIZED TRANSPORTATION GOALS & OBJECTIVES

1. Encourage the increase of non-motorized activity within Orange County.

Objectives:

- Identify current routes being used and desired future routes.
- Develop appropriate pedestrian and bicycle facilities/amenities at recreational, shopping, and work sites.

2. Improve the safety of bicyclists, pedestrians, and trail users throughout the County.

Objectives:

- Implement a Safe Routes to School program to encourage children to safely walk and bicycle to school.
- Identify and remediate traffic safety concerns.
- Educate the public regarding safety, awareness, traffic laws, and compatibility of pedestrians, bicyclists, and motorists.
- Ensure maintenance and safety of all existing and future routes.

CHAPTER 13 | GOALS, OBJECTIVES, & RECOMMENDATIONS

3. Develop comprehensive and interconnected bicycle, pedestrian, and trail networks that link to major destinations within the County.

Objectives:

- Identify gaps in the existing networks for future connections.
- Create county-wide non-motorized network maps.
- Adopt the Complete Streets policy.
- Work with local and regional transit service operators to connect bicycle and pedestrian networks to transit.
- Ensure maintenance of the trails throughout the network.

4. Collaborate with local officials and citizenry on non-motorized transportation planning.

Objectives:

- Encourage local jurisdictions to develop and/or adopt non-motorized transportation policies.
- Support protection of public land that could be potentially used for trail facilities.

5. Identify funding sources for non-motorized projects.

Objectives:

- Prioritize bicycle, pedestrian, and trail projects in the Transportation Improvement Program (TIP) and long-range regional transportation funding programs.
- Investigate all Federal and State funding sources that could be relevant for non-motorized transportation projects, and collaborate with local agencies to obtain funding.
- Work with transit agencies and operators to identify funding opportunities for multi-modal transportation projects.
- Work with local school districts to identify and obtain Safe Routes to School (SRTS) program funding.

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